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PAPER TRADE JOURNAL

Vol. XCVII SEPTEMBER 14, 1933 No. 11

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108

PAPER TRADE JOURNAL

ESTABLISHED 1872

SIXTY-SECOND YEAR

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

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TABLE OF CONTENTS

Frame New General Paper Code 11
Wisconsin Mills Speed Output 12
To Retire Bonds 12
Ahdawagam Increases Wages 12
Marathon Adds 100 Employees 12
Chicago Market Conditions Improve 13
Speakers for Safety Congress 13
Paper Merchants to Meet 13
Blue Eagle Hat Created 13
Rhinelander Retires Bond Issue 13
Paper Salesmen's Luncheons Resumed 13
Canadian News Print Outlook 14
British Columbia Mills Active 14
Canadian Paperboard's Future 14
Obtaining Costs in a Paper Mill 15
New Jersey Chapter Meets 21
Carthage Pulp & Board Taxes Met 21
Indianapolis Paper Demand Steady 21
Industrial Council for Three Rivers 21
General Code of Fair Competition for the Paper and Pulp Industry 22
Editorial **28**
The Older Employee in Industry 28
To Build New Power House 29
Latex Fiber Industries Expand 29
Tissue Men Elect Officers 29
Brightwater Paper Co. Leases Mill 29
J. A. Millar Chosen Vice Pres. 29
Technical Section
Ernst Mahler to Receive TAPPI Medal 31
New Members 31
TAPPI Fall Meeting Program 32
Pulp Testing and Specification Investigation 33
Price Bros. Reorganization Plans 42
Hermann Takes Over Unkle Screen 42
Obituary 43
Imports of Paper and Paper Stock 44
New York Market Review **47**
Miscellaneous Markets **48**
Market Quotations **48**

THE PAPER TRADE JOURNAL is indexed in Industrial Arts Index

Want and For Sale Advertisements, 54, 55

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PAPER TRADE JOURNAL

With Which Is Combined

PAPER

Vol. XCVII, No. 11 Thursday, September 14, 1933

Frame New General Code for Paper Industry

Latest Code As Finally Worked Out At Meeting of the Board of Governors of the American Paper and Pulp Association To Be Presented at Hearing Thursday Will, It Is Estimated, Restore Average Weekly Earnings to Nearly Peak Wage Year of 1929—Will Increase Number of Employees from 107,000 to 135,000

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 12, 1933.—Representatives of nineteen separate divisions of the paper industry supplying 60 per cent of the world's consumption of paper, Tuesday formulated the final details of a code to be submitted to the National Recovery Administration on Thursday, under which an increase of $70,000,000 a year in wages will be paid to employees of that industry.

Will Restore Wages Nearly to 1929 Basis

At a meeting of the Board of Governors of the American Paper and Pulp Association at the Hotel Washington, the code as finally worked out will reduce the average hours of work from over 46 hours per week in 1929 to 40 hours. It will immediately restore the average weekly earnings to nearly the figures prevalent in the peak wage year of 1929. It will increase the number of employees from 107,000 to 135,000 on the present low rate of production.

Back of this striking effort to comply with the Administration's efforts to restore prosperity are weeks of conferences involving a coordination of the requirements of widely separate groups of paper manufacturers beginning even before the National Recovery Act was passed.

Paper Among First Industry to Act

The paper industry was almost the first American industry to begin active plans to comply with the purpose of the Recovery Act, and some basic features of the present program were even then decided upon, though details were not made public pending a coordination, of the requirements of the widely different groups of the industry.

The industry's proposals are so far completed that a large part of the industry has already adjusted wages to the basis of the proposed code, even in advance of the formal submission of the code. The book paper industry, for instance, comprising 39 mills, went on the proposed new schedule on August 21.

In 1929 the average weekly wage was $26.53 and in May of this year $18.24. The proposed scale will produce an average weekly scale of $24.25.

Industry Entirely Reorganized

Before the industry could submit a code for approval, it was necessary entirely to reorganize the industry. The American Paper and Pulp Association, selecting S. L. Willson, president of the American Writing Paper Company, Inc., of Holyoke, Mass., as president, was converted from an association of mills into an organization of groups. With the presentation of the code adopted Tuesday, the Association comprises nineteen separate divisions, including all groups of paper manufacturers except the paper board and the news print groups.

The basic code as finally formulated applies to the entire industry. Each of the nineteen groups is submitting simultaneously a group code, accepting the industry's master code, with such further restrictions as apply to the individual groups.

These groups represent an invested capital of one and a half billion dollars, and about 128,000 employees in 1929. Inasmuch as the paper mills are to a large degree located in small industrial communities, where the paper mill may be the entire source of livelihood of the community, the proposed wage increases will have a direct effect on the prosperity of such communities in all but ten states of the union.

Will Add $70,000,000 to Annual Wages

The basic code as finally formulated will add $70,000,000 annual wages for a maximum working week of 40 hours, by the following scale:

Northern zone, minimum male labor rate 35 cents per hour, female 30 cents.

Central zone, minimum male labor rate 32½ cents per hour, female 27½ cents.

Southern zone, minimum male labor rate 30 cents per hour, female 25 cents.

The American Paper and Pulp Association in its new organization by divisions represents 29,316 tons of daily capacity, and only 1,840 tons of capacity are outside the organization in its present set up. The new master paper code just adopted and which will be presented at the hearing tomorrow is printed on page 22 of this issue of the PAPER TRADE JOURNAL.

Supplemental Conferences

A number of supplemental conferences were held early this week by various groups of the industry, all perfecting their individual codes preparatory to the hearing.

(Continued on page 47)

Wisconsin Mills Speed Output Under NRA

Nekoosa-Edwards Production Has Been So Satisfactory That Bonds Amounting to $225,000 Will Shortly Be Retired in Full—Employees of Plants at Port Edwards and Nekoosa Now on 40 Hour Week Basis, With Hourly Wage Increased

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., September 11, 1933.—Basing its decision on the deliberations of its newly organized mill council and the code proposed by the American Pulp and Paper Association, the Nekoosa-Edwards Paper Company will place important changes in effect September 16 with respect to wages and hours of employment.

Practically All Employees on 40 Hour Basis

Adjusted schedules place practically all employees of the mills at Port Edwards and Nekoosa, Wis., on a 40-hour week basis instead of 48 hours and leaves the compensation the same as the August 1, 1933, base. Common labor will be paid 38½ cents per hour, bringing a weekly wage of $15.40 as compared to $15.36 for 48 hours. All regular day workers will be on the 40-hour week and all six-day tour workers will work 40 hours, while seven-day tour workers will be on a six-hour day, making a 42-hour week. Time and one-half will be paid for all overtime. Bonus payments for production in all departments will be discontinued.

The mill council decided that the workers were to receive the same weekly wage for the new short-hour week as received for the 48-hour week. The hourly wage is increased so the total compensation per week is not altered from the amount received for the longer week.

Between now and September 16, the company will add not less than 150 men who will be trained in on the shifts, so the number of employees will be approximately 1,100 instead of the present 950.

To Retire Bonds

Production has been on such a satisfactory basis at the Nekoosa-Edwards mills that bonds amounting to $225,000 maturing July 1, 1933, will be retired in full before the first of the year, according to a letter sent out by L. M. Alexander, president. The company obtained an extension of time on meeting these payments due to conditions at the time of maturity, and up to date the net cash working capital has been increased approximately $100,000 since June 24, 1933. Current liabilities have also been substantially reduced. The company is meeting all its interest payments promptly and is continuing to move along in the right direction, Mr. Alexander says.

Ahdawagam Increases Wages

Employees receiving a minimum wage of 37½ cents an hour at the Ahdawagam Paper Products Company, Wisconsin Rapids, Wis. have been increased to 40 cents an hour to conform to the code of the Corrugated and Solid Fibre Shipping Container Association, according to Frank Walsh, manager. This makes the second increase in hourly wages within a month. Approximately 45 employees will benefit from the increase. The plant is now operated on a 40-hour week basis.

Marathon Adds 100 Employees

An addition of 100 employees has been made at the Marathon Paper Mills Company, Rothschild, Wis., to take care of revisions of operating schedules under the NRA program. Practically all of the mills in the vicinity of Wausau, Wis. are now on a six-hour shift basis, and the total re-employment for the area is reported at 519. Most schedules were placed in effect September 1.

News of the Industry

Substantial increases in orders are noted by the Hasco Valve Company, 1819 West St. Paul Avenue, Milwaukee, Wis., according to H. A. Schauer, president. The indirect cooking process for pulp, necessitating the use of strong acids, is being adopted by more of the paper mills. The result is a brisk demand for the stainless steel valves made by the Hasco company. Volume is substantially above 1932. Mr. Schauer believes the depreciation of the American dollar, depriving foreign countries of the advantage of the currency differential, has stimulated paper production materially.

Operations are expected to be resumed within a few weeks at the former Island Paper Company mill at Menasha, Wis. Only a few technicalities remain to complete the purchased transaction by the Mead Paper Board Company, Chillicothe, Ohio. It was necessary to secure approval by debenture holders. The mill, operated most recently as the Menasha Paper Mills Company, formerly employed 50 persons, but this number will be increased when production is started.

With importations of foreign pulp to Great Lakes ports increasing, Steven DePuy, Sr., contracting stevedore, of Milwaukee, Wis., is making plans to utilize the idle Northwestern dock at Green Bay, Wis., as a receiving center for most of the pulp redistributed to mills by either rail or barge. Last year the total receipts were 11,000 tons, and the 1933 tonnage is expected to reach 20,000. Docking facilities are adequate for foreign ships as well as lakes vessels. The most recent shipment to arrive was 1,220 tons aboard the Canadian steamer, *Gray Beaver*. All but 420 tons was reloaded and delivered by barge to the Thilmany Pulp and Paper Company, Kaukauna, Wis.

The steamer *Soreldoc* arrived at Ashland, Wis. last week with 2,200 tons of Swedish pulp for transfer by rail to the Marathon Paper Company mills. It was the first of three shipments expected by the company, totaling 6,000 tons.

Progress made by the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., since part of its news print facilities were turned over to finer grades, was explained by Lyman Beeman, technical director of the company, in an address before the Wisconsin Rapids Rotary club last week. The new products include rotogravure and coloroto, writing, book and catalog grades, as well as many specialties. A large business has been built up on union water-marked paper because the mill operates under union agreement. The box board machine has been in continuous operation to supply its converting division, the Ahdawagam Paper Products Company.

Two deaths reported last week were those of Theodore Paeth, Appleton, Wis., and William Surprison, Port Edwards, Wis. Mr. Paeth was millwright foreman of the Atlas mill of the Kimberly-Clark Corporation for 32 years. Mr. Surprison has been employed in the sales department of the Nekoosa-Edwards Paper Company for 16 years.

Chicago Paper Market Conditions Improving

Demand for Various Standard Grades of Paper More Active Following Labor Day—Broader Request Experienced for Book and Cover Papers—Advances Registered on Coarse Wrapping Paper and Specialties—Paper Board Continues Buoyant

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., September 11, 1933—Chicago paper merchants in general are waiting for a disposal of the paper code, and are also counting on a most interesting session of the National Paper Trade Association scheduled for the Stevens Hotel, Chicago, October 4, 5 and 6. Meanwhile, the various sources of information reported a strengthening of markets following Labor Day. Krafts and coarse papers in general made advances. Books and covers held gains and saw demand broaden out from Fall buying. Holiday business is going on apace as buyers are endeavoring to get in before further advancement in various lines. Fine papers were reported of a stronger tone. The board market was considered highly favorable in comparison with previous Fall periods. Specialty papers of all kinds were reported to be heading for better times. The waste market showed more than ordinary activity.

Speakers Announced for Safety Congress

Personnel of speakers featuring the Paper and Pulp section activities of the 22nd Annual Safety Congress, to be held in Chicago October 2 to 6, has been announced by the National Safety Council and by J. J. Plzak, general chairman of the section. Speakers include George J. Adams, industrial supervisor, International Paper Company; H. D. Banta, assistant general superintendent, Hoberg Paper and Fibre Company; R. O. Dickinson, employment manager, Cornell Wood Products Company; C. K. Boyer, mill manager, Consolidated Water Power and Paper Company; and W. J. Brennan, safety engineer, Maine Department of Labor and Industry. The Paper and Pulp section will convene on Monday afternoon, October 2; Tuesday morning, October 3, and Thursday morning, October 5. All meetings are to be held at the Hotel Stevens, as well as the various exhibits which are always a feature of the session. Many executives attending the Safety Congress will also have the opportunity of contacting with the National Paper Trade Association convention, to be held at the same hotel, and at virtually concurrent dates.

Paper Merchants to Meet

The Chicago Paper Association is to hold an important meeting Tuesday evening, September 12, at which time coarse paper practices under the suggested paper trade code are to be discussed at length. M. A. McNulty, vice president of the industrial division, is to preside and, accordingly, discussion will center around the procedure of firms contacting industrial trade in the Chicago territory. Mr. McNulty, incidentally, will be fresh from a late vacation trip which took him, by motor, to Oregon, Wisconsin and back to Kilbourne and the steamer trip through the Dells. His wife and child accompanied him.

Blue Eagle Paper Hat Created

A Chicago concern is the creator of a new selling idea which may be of considerable profit because of the NRA appeal to the consuming public. The Paperlynen Company has produced a paper hat bearing the Blue Eagle of the NRA. The hat can be worn "sailor" or "soldier" fashion and is designed for wear by clerks in stores, soda fountains and other public places. The item is being extensively pressed along with nationwide efforts to get consumer enlistment in the NRA drive and with the efforts of companies to advertise their acceptance of NRA provisions.

Paper Salesmen's Luncheons Resumed

The Middle West Division of the Salesmen's Association of the Paper Industry ushers in its busiest season today, September 11, with the first Fall meeting of the year. Meanwhile, the golf chairman, William Tilden, has isued another snappy piece of literature describing the golf final to be held at the Westmoreland Country Club, Friday, September 15. "Bless this old committee's last days with a notice of your intention to come", is Bill's last official appeal. The curtain rings down on the monthly events with the Westmoreland event being the last outing, with the exception of the annual event at Olympia Fields scheduled for the time of the National Paper Trade Association sessions in Chicago October 4, 5, and 6.

News of the Trade

The Swigart Paper Company announces a new line of Deeplake cover paper carried in white, Indian, blue, green, gold, gray, brown, red and black and also supplied in Antique finish. The nine attractive colors come in three popular weights. The product is described, in an effective sample folder, as "meeting the need for a satisfactory low-priced cover paper."

From down-state Illinois comes news of the formation of a new Illinois paper concern at Peoria. The new company, the Peoria Wholesale Paper Company, is located at 1530 North Adams in Illinois' second largest city and is to be managed by Roy De Hater, until recently a representative of the Capital City Paper Company, of Springfield, Ill. Mr. De Hater began his paper experience with the Graham Paper Company of St. Louis, beginning as office boy and ending up as field representative in Peoria. The new concern will stock wrapping and fine papers.

A new trade association, sped on by the development of the NRA and known as the National Paper Box Suppliers Association has for its vice president a Chicago man, A. C. Anders, of Brader, Smith & Company.

The Orchard Paper Company of St. Louis is reported to have purchased the equipment of the Middle States Paper Mills, Chicago, makers of specialty wrapping papers, and intends to run the plant as a division of the Orchard organization and under that name. The company will also manufacture notion and millinery bags and other products.

Rhinelander Retires Bond Issue

On September first the Rhinelander Paper Company, of Rhinelander, Wis., manufacturers of Glassine and Greaseproof papers, retired its 1933 $100,000 issue of 5½ per cent bonds as well as paying the interest on all outstanding series.

This leaves the Rhinelander Paper Company with less than $400,000 of outstanding bonds. There is no preferred stock.

The company has held a strong cash position throughout the entire depression and at the same time has kept its plant equipment in excellent condition.

Canadian News Print Paper Outlook Brighter

Prospect of Higher Prices Across Border, Resulting From Provisions of NRA Code, Leads to Increased Demand From United States Publishers—Anything Approaching Price Stability Would Be Welcome Development to Operators in Dominion

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., September 11, 1933—Although some time must necessarily elapse before the particular problems of the news print industry in Canada can be solved, nevertheless, there has recently been a noticeable improvement in the general outlook. The prospect of higher prices across the border, resulting from the provisions of the NRA and greater business activity, has led to an improved demand from the States, the major market for Canadian news print. As a result the volume both of production and shipments of news print increased more than is usually the case from the first to second quarter of the current year, and in June last both figures were somewhat above those of the corresponding month in 1932. Owing to the low price still current, the value of the output is less than it was a year ago. There is, however, some prospect of higher prices. It would seem as if upon the development of events in the United States, for better or for worse, hangs the immediate prospects of the industry.

In the news print division of the pulp and paper industry, for which a separate code has been drawn up, Canadian operators who have unsuccessfully endeavored to maintain the price structure, have been disappointed at the absence of any sign of price regulation in the new code recently submitted. It had been hoped that the terms of the agreement would provide for action on the part of the administration to keep Canadian producers from underselling the domestic operators who bound themselves to the code. No provision along these lines has, however, been made so far, although it is felt that some assurance of being protected by the Government against unfair competition from outside operators will have to be given the United States producer before he could justify his becoming a party to any agreement that would increase his labor costs. Any such protective steps taken by the United States Government would mean that either the Canadian operators would have to co-operate in preserving the price structure provided for in the code or the Canadian Government would act, probably by means of establishing a system of export licenses that would permit of the regulation of prices for export to the United States market.

With consumption of news print already having shown a healthy degree of expansion, anything approaching stability in the price structure would be a welcome development to operators in Canada who have been carrying on under difficulties whereby there has been no semblance of a fixed price level with individual mills, working in receivership or for the benefit of the bondholders, offering special discounts and extending other inducements in order to obtain tonnage. Under Government regulation of exports through a policy of licensing of exports, such special discounts and other price-cutting devices would be eliminated, it is claimed.

Meanwhile, there is no possibility of an increase in the price of news print for a considerable length of time, according to Viscount Rothermere, British newspaper peer and holder of wide interests in Canada, who has arrived in this country. "The price of news print, with that of other commodities, depends upon consumption, and until business conditions improve newspapers and magazines will be unable to make use of anything in comparison to the amount they used extravagantly a few years ago," said Viscount Rothermere.

British Columbia Mills Active

According to word from British Columbia, pulp and paper mills operating in that province are not expected to be affected by enforcement of the National Recovery Act in the United States, despite the fact that the United States constitutes one of their most important markets. Mills manufacturing specialties, such as tissues and wrappings, are already operating under conditions considerably better than in the United States, where keen competition forced drastic economies during the last three years. British Columbia mills are operating according to a higher labor code than has been observed in the United States in some time. Most of the mills in British Columbia are more active now than they were at a corresponding date last year, although prices are still so low that there is small reward for their operations. Westminster Paper Company, in the specialty business, however, has completed a satisfactory year and reported a profit for the year ended July 31 amounting to $21,578, as compared with $19,970 for 1932. These profits show net profit after bond interest, depreciation and income taxes. They reflect a greater measure of improvement than is indicated, as the depreciation allowance of $29,900 was $14,900 greater in the year under review than in the year ended July 31, 1932, and income tax was $2,000 higher. Actually, therefore, the earnings were $18,000 higher this year.

Canadian Paperboard's Future

Although there is some talk of re-opening the mills of the Canadian Paperboard Company, now in the hands of a receiver, no change has taken place in the position of the company since the adoption of the reorganization plan by the bondholders, stockholders and creditors. The lawyers are still working on details of the scheme and it is expected that some time will elapse before all legal matters have been cleared away and the plan put into operation. The adopted plans call for the setting up of four operating companies to take over the mills at Toronto, Campbellford, Montreal and Frankford. Stock of these companies is to be placed in the hands of a controlling company which, in turn, will issue its stock to the bondholders, preferred and common stockholders, and creditors in various ratios. Except for a small amount of 10-year notes payable to the Quinte and Trent Valley Power Company, the new company will have issued only preferred and common shares.

Notes and Jottings of the Trade

Alliance Paper Mills, Ltd., Merritton, Ont., are installing an additional set of super calendar machines in their Lybster mill. The new equipment will be in operation in about a month's time.

George C. Winlow, Toronto, sales manager of Alliance Paper Mills, Ltd., surprised himself at the Lambton Golf and Country Club the other day by making a 170-yard hole in one for which he was in receipt of a handsome trophy donated by the Dunlop Tire Company.

Obtaining Costs in a Paper Mill*

By Henry E. Fletcher[1]

The accompanying article was published 31 years ago (June, 1912) and is reproduced because it outlines a method of obtaining grade cost quickly which might be used to good advantage by many mills today. We are selling "paper machine hours" and if we are to do so successfully must base our grade cost accordingly.

THOS. J. BURKE.

The subject of costs is today one of the utmost importance to paper manufacturers who are forced to sell their product on a market so low as that to which the United States has degenerated. Every manufacturer has ideas of his own upon this subject and the result is that no two mill men are able to make a comparison of results on any standard basis.

The system of costs which is here set forth has been worked out with considerable success in our own mill, as well as in plants in the east and west, and has afforded much valuable information through comparison of individual and separate results. The paper manufacturer of today must be broadminded enough to realize that the game is too big for any one man or one mill to monopolize, and he realizes that he must seek the confidence and trade-information of his neighbor, knowing how useless it is for each to experiment on the same theories and machinery. Indeed, the American Paper & Pulp Association might well afford to run a small mill as an experimental station for the benefit of its members.

We have all been able to tell the cost of paper at, say, the end of the month, but this has not been satisfactory. The system here described relates to a means of computing the cost of manufacture of different grades in a single general line, and is designed more particularly to enable any manufacturer interested to expeditiously and easily determine the cost of various grades of paper in the course of manufacture. This is of especial value to a salesman, since it enables him to figure what his mill can do when the jobber asks him to match a sheet.

The system consists of a chart, on which various tables of cost are completed, and a computing table, with the curves of which the tables of costs are used.

The grades of paper made in every mill are numerous and the different grades lead to many variables. Our method of computing is so devised as to cover important variables to be considered in figuring costs and selling prices.

* Paper, June 26, 1912.
[1] Fletcher Paper Co., Alpena, Mich.

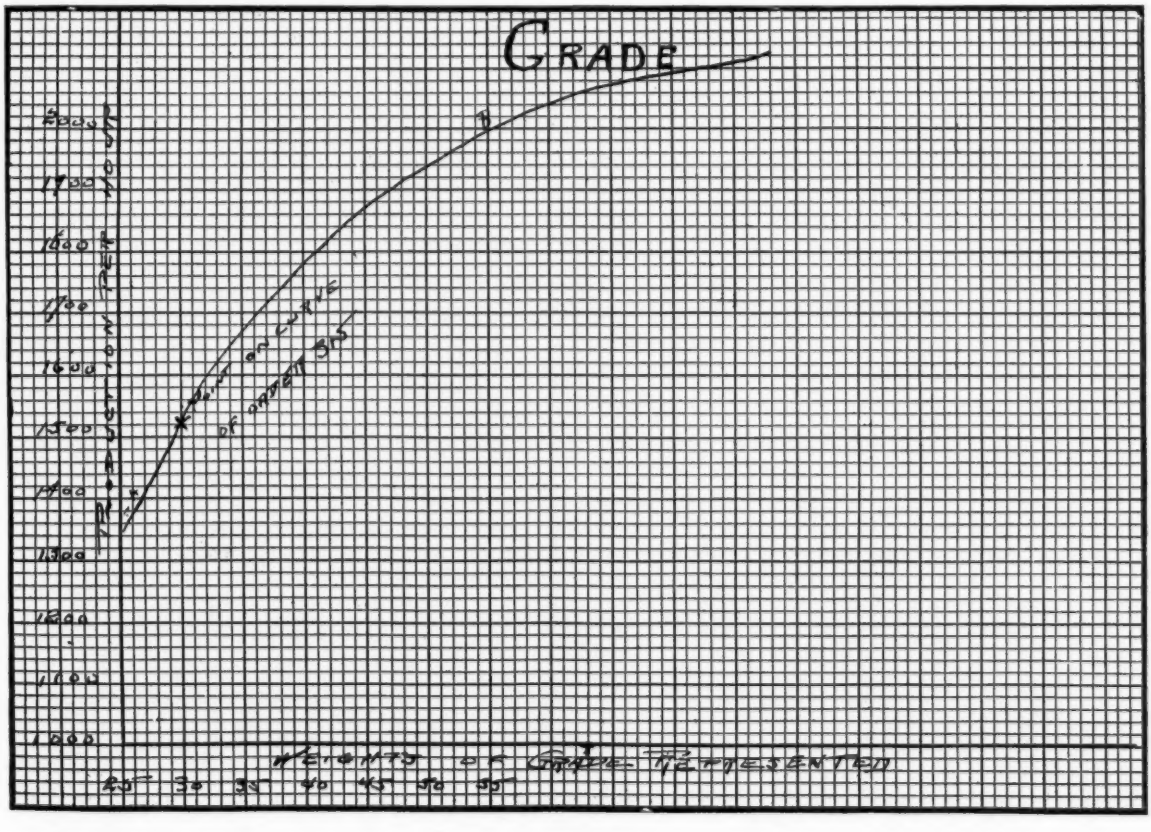


FIG. 1

First let us take any one grade of paper and all the weights of that grade. In the accompanying chart (Fig. 1) the spacing along the ordinate represents the weights of the grade of paper under consideration, while that along the abscissa represents the production per hour. When the various productions are obtained for the different weights of the grade, the user has only to plot the points and connect them to obtain what is known as the production curve (line A-B).

Our payrolls determine for us the cost of running a machine for one hour. By dividing the labor per hour by the production per hour, the labor cost per cwt. is obtained for the different weights of the grade taken. If a desired profit or interest charge on the investment of, say, 10 per cent to 15 per cent (or whatever figure may be determined on) is assumed, it can be readily figured how much of this charge each machine must pay per hour in proportion to its trim, and from the production per hour, how much per cwt., on the grade and weight taken, the following table being used in computing these data:

Prod. per hr.	Lab. per hr.	Lab. per cwt	Int. per hr.	Int. per cwt.

Now, with the use of the card index (Fig. 2), we will follow the cost of the paper as it goes through the mill.

For example: Mr. Smith sends an order for "A" grade, white butcher's paper, 30 lb. weight, to be finished in both rolls and sheets.

This order is entered as No. 315 and it was, as the entry shows, placed on No. 1 machine on April 4, 1912.

	Cost per Cwt.	Order No.	Order cost	
Sulphite	1.60	315	$1,437.38	
G. Wood				
Size	.043			
Alum	0.75			
Fuel	.172			
Overhead	.209			
Factor	2.099			
Labor per Cwt.	.375			
Finished Rolls	.014			
Finished Sheets	.057			
Colors	.002			
Filler				
Specials				
Interest	.655			
Totals Rolls	3.145			
Totals Sheets	3.188			

FIG. 3

The time is taken when the order goes on the machine, including all washups and shutdowns for which this order is responsible. Our card shows that No. 1 machine made 46,140 lb. running 30¼ hours, plus 2¼ hours for shutdowns, giving us a production of 1,525 lb. per hour. On the lower left hand side of this card (Fig. 2) is given the complete formula from which this paper is made.

Under Order No. column is again entered our No. 315, for in some cases this might have been a machine order which comprised many orders when the stock reached the finishing room.

Under the column for rolls and sheets, it will be seen that 12,964 lb. was finished and shipped in rolls and 32,298 lb. in sheets. This paper was shipped to consignee in Car No. 22,962 L. S. & M. S.

On turning over this card (Fig. 2) Fig. 3 is seen.

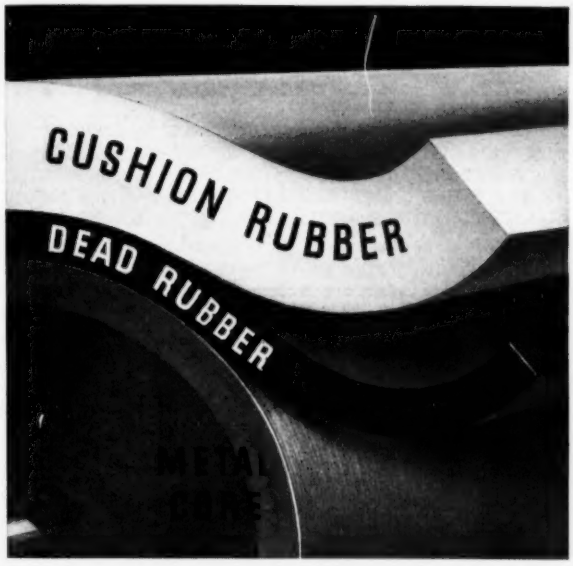
On this card (Fig. 3) the cost per cwt. is followed,

Order No. (315) DATE (April 4, 1912)
Grade ("A" White Bu.)

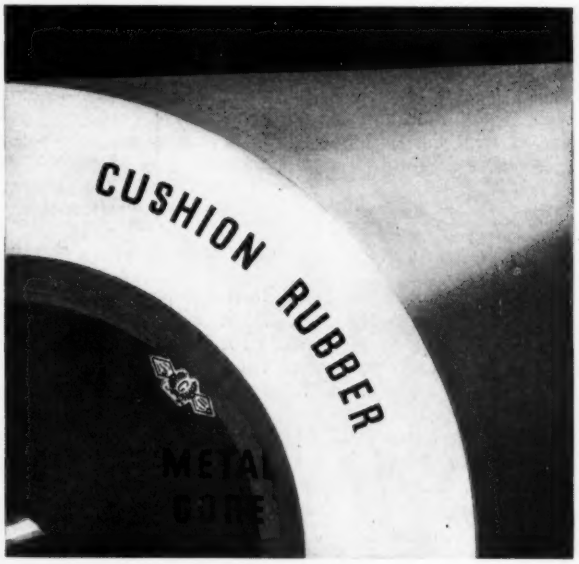
Machine No. 1—Pounds Made (46,140)		Time 30¼	Time Down 2¼	Production Per Hour 1,525
		Order Nos.	Rolls—Sheets	Car and Consignee
Formula: Sulphite	—% Bleached			22,962 L. S. & M. S.
	—% Balsam			
	—% Hemlock	315	12,964 lb. 32,298 lb.	John Smith.
G. Wood				
Alum	1¼ Pails			
Size	2½ Pails			
Clay				
Colors	Kind Lbs. Oz.			
	Lbs. Oz.			
	Lbs. Oz.			
	Lbs. Oz.			

FIG. 2

STOP SPENDING MONEY . . . on Dead Horses!



Old Fashioned Hard-rubber Base Roll



Modern Goodrich Vulcalock Roll

BUYING rolls with a hard rubber base is like spending money on a dead horse. Because hard rubber is dead rubber, and represents just so much cushion waste. It is there only as a binder to hold the outer layer of cushion rubber to the metal core. At best it was a manufacturer's compromise—a relic of the days before Goodrich discovered Vulcalock, and found *a better way* to bond soft elastic rubber inseparably to metal.

When you specify Goodrich Vulcalock Rolls, you get what you pay for—100% live cushioning from outer surface to metal core, with 25% less cushion waste and up to 40% more cushion wear. But when you purchase other makes of rubber rolls, you have to put up with a hard rubber base—between cushion and core. That means less cushion; it means that you spend your money on dead rubber which has no cushioning properties—no longer serves a useful purpose.

With Goodrich Vulcalock Rolls, moreover, you don't have to re-cover so often. And when you do re-cover them, it isn't necessary to re-rough-thread your metal base, which wastes metal. It isn't necessary to machine your core thin and shorten its life; nor to pay for the added rubber required to build the roll up to the correct outside diameter. Vulcalock Rolls last longer, are less expensive to maintain; and yet the first cost is no higher.

Goodrich Rolls are made by the exclusive Vulcalock process—with soft rubber cushion clear to the core. Vulcalock Rolls do not have to depend on a dead, hard-rubber base. Specify Goodrich Vulcalock Rolls . . . and stop spending money on dead rubber . . . The B. F. Goodrich Rubber Company, Mechanical Rubber Goods Division, Akron, Ohio.

ROLL COVERINGS—BELTING—HOSE—MISCELLANEOUS RUBBER PRODUCTS

Goodrich

ALL *product problems* IN RUBBER

NRA MEMBER WE DO OUR PART

Vulcalock *Paper Mill Rolls*

Form 69 *Order No.*..... *Date*.....

Grade .....

Machine No.	*Lbs. Made*	*Time*	*Time Down*	*Prod. Per Hour*

Formula:	ORDER NOS.	ROLLS SHEETS	CAR AND CONSIGNEE
Sulphite	.....	.....	.....
G. Wood.....	.....	.....	.....
Alum	.....	.....	.....
Size	.....	.....	.....
Clay	.....	.....	.....
Colors .....*Lbs*.....*Oz.*	.....	.....	.....
.....*Lbs*.....*Oz.*	.....	.....	.....
.....*Lbs*.....*Oz.*	.....	.....	.....
.....*Lbs*.....*Oz.*	.....	.....	.....

BLANK INDEX CARD

starting with a fixed cost for both the sulphite and groundwood. Referring to the formula, it will be noted that a charge of $1.60 per cwt. is made for sulphite. In this case, there is no groundwood called for.

On size and alum actual figures are easy to obtain, and from the amount of each used by the formula the respective charges are made of .043 and .075 cent. The item of fuel is approximated, in a measure, as it is taken from cost per cwt. of the previous years' run of the mill.

In the same way is estimated the item of overhead, which in this case is .209 cent and includes clothing, officers' salaries, taxes, insurance, etc., all taken from the annual statement of the previous year. The sum of these figures gives a "factor" of $2.089, which is true of any weight of the grade of paper under consideration.

By referring to the computing table, it is found that the labor per cwt., for a production of 1,525 lb. per hour, equals .375 cent. This labor is the cost through the entire mill, with the exception of the finishing room. Reports from the finishing room give the cost of finishing rolls as .014 cent and of finishing sheets as .057 cent.

Again referring to the computing table, it is found, that the interest for a production of 1,525 lb. per hour is

	COST PER CWT.	ORDER NO.	ORDER COST	INTEREST
Sulphite	.....	.....	.....	.....
G. Wood	.....	.....	.....	.....
Size	.....	.....	.....	.....
Alum	.....	.....	.....	.....
Fuel	.....	.....	.....	.....
Overhead	.....	.....	.....	.....
Factor	.....	.....	.....	.....
Labor Per Cwt.	.....	.....	.....	.....
Fin. Rolls	.....	.....	.....	.....
Fin. Sheets	.....	.....	.....	.....
Colors	.....	.....	.....	.....
Filler	.....	.....	.....	.....
Specials	.....	.....	.....	.....
Interest	.....	.....	.....	.....
Totals {*Rolls*	.....	.....	.....	.....
Totals {*Sheets*	.....	.....	.....	.....

REVERSE SIDE OF INDEX CARD

equal to .655 cent, giving a complete *mill cost* of $3.145 per cwt. on the rolls, and $3.188 per cwt. for the sheets, or a total cost on order No. 315 of $1,437.38.

The mill attaches to this card a sample of the paper made and files it after entering on a separate card (shown in Fig. 4) the headings with the interest and mill cost, showing the interest, which is included in the mill cost separately as a means of figuring profits at the end of the month.

CAR ....WEIGHT.....DATE.....

CONSIGNEE ....

	REMARKS
MILL COST	
FREIGHT	
DISCOUNT	
COMMISSION	
TOTAL COST	
INVOICE	

FIG. 4

Car No. 22962 L. S. & M. S. Weight 45,262 lb. Date Apr. 8, 1912

Consignee John Smith.

Interest	$302.21	Remarks.
Mill Cost.....	1,437.38	Order No. 315
Freight	67.89	"A" White Bu.
Discount	47.53	
Discount	47.55	
Commission	.....	
Total Cost.....	1,552.80	
Invoice	1,584.17	
	$31.37	

FIG. 4—THE BLANK FORM FILLED OUT

The sales office on receiving this card adds the freight, discount and commissions, attaching the grand total cost of the car of paper. Then by entering the amount of the invoice, it can be readily ascertained whether or not Order No. 315 was good or bad business, and to what extent. The sum of the card gives a complete analyzed statement of the month's business.

I should be glad to confer with any manufacturer who may consider this system feasible and one that may enable us all to work under the same standards.

I wish here to thank C. A. Jasperson, of the Nekoosa-Edwards Paper Company, for valuable assistance in the preparation and perfection of this system.

New Jersey Chapter Meets

The meeting of the New Jersey Chapter of the Eastern Association of Dealers in Paper and Woolen Mills' Supplies, held at the Robert Treat Hotel, Newark, N. J., Thursday evening, August 31, 1933, was attended by practically every dealer, grader and packer engaged in the industry and doing business in the State of New Jersey. The attendance, it is claimed, broke all records for chapter meetings.

William P. Kelly, president of the New Jersey Chapter, presided and was assisted by the other officers, Louis E. Meluso, vice president, Anthony F. Carlo, treasurer, and William Yeskel, secretary.

In opening the meeting, Mr. Kelly expressed appreciation for the wonderful spirit of co-operation that prevails among the membership of the New Jersey Chapter. He felt that "with such loyal support and co-operation the Chapter's membership roster is bound to reach proportions beyond all expectations."

Charles J. Browne, the managing director of the Eastern Association, reviewed the progress that has been made since the inception of the Eastern Association. Meyer Lowenstein, of Lowenstein Brothers, addressed the assemblage on "The Eastern Association and What It Means to the Eastern Dealer, Grader and Packer."

New applications for membership in the Eastern Association were received from the following concerns, Clifton Waste Paper Company, Clifton, N. J.; Joseph De Spirito, Dan Ragonese, Patsy Ragonese and George Volker, Elizabeth, N. J.; Antonio Arturi, A. R. Carrano, Giuseppe Chiodo, Vincenzo Mastria, Antonio Massa, Marena Brothers Company, Inc., Felice Palangio and Quigley & Company, Jersey City, N. J.; Joseph Capriglione, V. Leonardis & Sons, Lowenstein Brothers. Newark Waste Company, Pasquale Pepe and Louis Ferrone, Inc., Newark, N. J.; Joseph Lapelosa, Inc., New Brunswick, N. J.; American Paper Stock Company, Angelo D'Amelir Paper Stock Company, Rosario Lobosco, M. Macchiarella and M. Palitinsky & Sons, Inc., Paterson, N. J.

Carthage Pulp & Board Co. Taxes Met

[FROM OUR REGULAR CORRESPONDENT]

CARTHAGE, N. Y., September 9, 1933.—Announcement was made here this week that the delinquent taxes on the Carthage Pulp and Board Company were met by Stroud & Co., a Philadelphia bonding house which holds the controlling interest in the local concern. No announcement was made as to the future disposition of the property but it is expected that the newly organized Carthage Paper Makers will continue operations under lease. Settlement of the taxes prevented the property from reverting to the town of Champion. The property was placed on sale by county officials early in August in an effort to recover taxes amounting to $5,599.80.

Indianapolis Paper Demand Steady

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., September 11, 1933—Paper demand here continues to hold fairly steady in spite of seasonal influences. However, this week business is expected to be stimulated to a considerable extent by the opening of schools. The opening of the fall season also is expected to give impetus to advertising that has been held off during the hot months. At the present time the fine paper market is very firm and with increased demand the entire market should be satisfactory. Seasonal influences have mitigated, somewhat against the news print demand. This demand should increase actively this month.

Continued warm weather has kept demand for summer specialties to a relatively high level. Dealers' stocks are not heavy and while they are not buying large quantities now, the orders are frequent. It is not their intention to be caught with any surpluses with the arrival of cool weather.

From the manufacturing centers, reports are encouraging. Most of the factories in this state make some sort of containers or box board and the last month has seen production expand gradually. There is no apparent disposition on the part of the factories to glut the market, but orders seem to be plentiful and some of the plants are working twenty-four hours a day and still are behind with current demand. Warehouse stocks have been sadly depleted during the last two months and it is likely that any diminution of orders would have little effect on the plants until warehouse stocks are built up to normal. The container men seem to be exceptionally well favored.

Demand for coarse paper and bags also remains good in spite of the season. Makers of wax paper for the bread trade continue to operate virtually at capacity. Paper stock men report a slight recession in mill demand but conditions even yet are so much better than they were three months ago when the stock men could make no sales at any price that there is very little complaining.

Industrial Council for Three Rivers

MONTREAL, Que., September 11, 1933—From Three Rivers, Que., the Canadian International Paper Company announces the formation of an industrial council, representative of both men and executives, to discuss problems arising in connection with the company's paper mills and to submit its findings for the guidance of the management.

Seven men, elected by the workers to represent their interests, are: Eugene Croteau, Aladin Gigure, Marshall Tebo, J. A. Gelinas, Paul Levesque, Fred Saint Pierre and Napoleon Leclerc. Representatives of the executive were appointed as follows by I. H. Copeland, the manager; J. B. West, K. S. Lebaron, K. L. Mackenzie, Sam Whipple, Frank Haney, A. G. Damset and B. C. Brown.

Manager Copeland states that the orderly fashion in which the men elected their representatives and their enthusiasm for the industrial council scheme, which is aimed at achieving better management of the mills, was a tribute to the understanding and progressiveness of the mill employees. Mr. Copeland is automatically president of the industrial council, as a result of his position as manager, but does not vote when decisions are being taken.

Representatives of the men met for the first time on September 7 when they chose a president and a secretary of their section of the industrial council. They also selected three men who will sit on the general industrial council, which will act, it is understood, as a kind of court of appeal in case of differences in opinion which cannot be settled by the mill's industrial council.

General Code of Fair Competition for the Paper and Pulp Industry

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 13, 1933.—After prolonged sessions all day Tuesday, lasting far into Tuesday night, and until noon today, the master code of the paper industry was finally polished into shape by the Board of Governors and special committees of the American Paper and Pulp Association. The revisions will be presented as substitutes for the code as previously filed.

Most of the changes were to clarify the purpose of the various articles, but provisions as to accounting and selling were entirely rewritten to make them far more specific than the original text.

It was also decided to omit all of section three, article six, so called merit clause as it appeared in accepted automobile code. Its original draft of the labor provisions of the code included a provision closely resembling that in the automobile code, but the paper industry finally decided to limit its labor provisions as to collective bargaining to the text of the Recovery Act.

The code will be presented by S. L. Willson, president of the Association, but discussion of various articles will be made by other spokesmen for the industry.

THE REVISED CODE

To effectuate the policies of Title I of the National Industrial Recovery Act the following is hereby established as a Code of Fair Competition for the Paper, Paperboard and Pulp Industry.

Article I—Definitions

1. Where used in this Code and in all codes subordinate hereto the following definitions shall apply:

"Industry"—The manufacture in the United States from pulpwood, wood pulp or other stock or pulp, of paper, paperboard and pulp, provided however, that if and when the provisions of this Code shall be extended to cover any products of converters then the word "industry" shall include the same.

"Member"—A person engaged in such industry.

"Division"—A division or section of the industry recognized as such by this Code.

"Act"—Title I of the National Industrial Recovery Act.

"Administration"—The National Industrial Recovery Administration.

"Administrator"—The National Industrial Recovery Administrator.

"Person"—Includes natural persons, partnerships, associations, corporations, trustees, trustees in bankruptcy and receivers.

Article II—Organization

1. The Executive Committee of the American Paper and Pulp Association is hereby designed as the Agency for administering the provisions of this Code and is hereby named and is hereinafter referred to as "The Paper Industry Authority." The Administrator may designate one or more persons as additional advisory members thereof; the member or members so designated shall have no vote but in all other respects shall be members of the said Paper Industry Authority.

2. The industry is divided into such divisions as are now or may hereafter be established by the Paper Industry Authority with the approval of the Administrator. Any question as to the division into which any particular class or kind of paper, paperboard or pulp or any product of conversion thereof may fall shall be determined by the Paper Industry Authority. The Paper Industry Authority may create a new division to include the manufacture of any product or products which do not fall within any division of the industry then established and such division may then adopt and submit a divisional code as provided in Article III hereof.

3. In each division there may be one divisional association to which every member of the industry engaged in the manufacture of any product included in such division shall be eligible for membership.

4. The expenses of administering this General Code and of each divisional code subordinate hereto shall be borne pro rata, in accordance with the formulae approved and adopted by the Paper Industry Authority and/or the respective Executive Authorities, respectively by those divisions and by those persons subject thereto and enjoying the benefits thereof. Failure of any such division or any such person to pay any such assessments within thirty (30) days from the due date thereof shall constitute a violation of this General Code and/or the subordinate divisional code involved.

Article III—Divisional Codes

1. Each such divisional association may adopt a divisional code and may submit the same, through the American Paper and Pulp Association to the Administrator for approval under the Act. Such divisional codes when approved by the Administrator shall have the same force and effect as to the division of the industry as this Code.

2. Such divisional codes shall be subordinate to this Code and shall specifically recognize this Code as applicable to all members of the industry engaged in manufacturing products falling within the division for which such divisional code is submitted.

3. Such divisional codes shall cover all grades which by custom are recognized as belonging to each respective division and such other grades as shall be later classified by the Paper Industry Authority as belonging to such divisions.

4. Each such divisional code shall designate an agency for the purpose of administering such divisional code which shall be denominated "The Executive Authority" of such division.

5. Such divisional codes may contain such provisions relating to said division as may be appropriate for inclusion in a Code of Fair Competition under the Act, provided that no such code shall contain any provision contrary to or inconsistent with the provisions of this Code.

Article IV—Hours of Labor

1. No employee in the industry shall be required or permitted to work more than eight (8) hours in one (1) day or more than forty (40) hours in one (1) week, with the following exceptions:

(a) Such limitations shall not apply to employees regularly engaged in an Executive or Supervisory capacity, office or salaried employees receiving thirty-five ($35) dollars or more per week, or to outside salesmen, watchmen, chauffeurs, truckmen, switching crews, or to engineers, and

firemen, or to employees engaged in emergency repair or maintenance work.

(b) In cases where an emergency or unusual demand places a temporary and extraordinary burden on a member such limitations shall not apply, but in no such case shall employees be required or permitted to work more than an average of forty (40) hours per week in any six (6) month period or to work more than forty-eight (48) hours in any one (1) week. For the purposes of this section the first six months period for each employee in the employ of any member at the effective date thereof shall begin with that date, and the first six months period for any employee thereafter employed by any member shall begin with the date of employment of such employee by such member.

(c) In continuous process operations, such limitations shall not apply to crews, while engaged at the end of a run, in wash-ups, changing wires and machine clothing and in otherwise preparing for the succeeding run; nor to highly skilled operators when the cessation of operations at the end of their tours would result in serious loss or would deprive other workers of employment.

2. At the end of each calendar month every member shall report to the Paper Industry Authority, in such detail as it may require, the number of man-hours worked in that month under the foregoing exceptions and the ratio which said man-hours bears to the total number of man-hours of labor of the same class during said month.

3. The provisions for maximum hours set out in this article establish a maximum number of hours of labor for every employee covered, so that under no circumstances shall such an employee be knowingly employed or permitted to work for one or more members of the industry in the aggregate in excess of the prescribed number of hours.

Article V—Wages

1. The minimum rate of wage of any mechanical worker or artisan employed in any plant, mill or factory or on work connected with the operation of any such plant, mill or factory shall be as follows:

(a) Northern Zone, which shall consist of all of the territory of the United States except the States named in subdivisions (b) and (c).

Male labor 35 cents per hour.

Female labor 30 cents per hour.

(b) Central Zone, which shall consist of the States of Delaware, Maryland, Virginia, West Virginia, Kentucky, Tennessee and North Carolina, and the District of Columbia.

Male labor 32½ cents per hour.

Female labor 27½ cents per hour.

(c) Southern Zone, which shall consist of the States of South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Arkansas and Texas.

Male labor 30 cents per hour.

Female labor 25 cents per hour.

Provided, however, that in case the rate per hour for the same class of labor was on July 15th, 1929 less than such minimum rates, the rate per hour paid shall be not less than the rate per hour paid on July 15, 1929, but in no event shall the rate per hour be less than ninety (90%) per cent of the rates above specified.

2. Pieceworkers shall be paid at rates which will yield a worker of average skill for an hour's work not less than the minimum rate prescribed.

3. Learners, for a period of (6) weeks, may be paid not less than eighty (80%) per cent of the minimum rates prescribed in the foregoing sections, but no person who has worked a period of six (6) weeks for any member as a learner, may thereafter be classified as a learner.

4. The minimum rates of wages for all other employees except commission salesmen, shall be as follows: Not less than fifteen ($15) dollars per week in any city of over 500,000 population, nor less than fourteen dollars and fifty cents ($14.50) per week in any city between 250,000 and 500,000 population, nor less than fourteen ($14) dollars per week in any city between 2,500 and 250,000 population, nor less than twelve ($12) dollars per week in towns of less than 2,500 population. Provided, however, that office boys or girls may be paid not less than eighty (80%) per cent of such minimum wage, and the number of employees classified as office boys or girls shall not exceed five (5%) per cent of the total number of employees covered by the provisions of this section.

5. The minimum wages hereby prescribed shall not in any way be considered as a discrimination by reason of sex and where, in any case, women do substantially the same work or perform substantially the same duties under the same conditions as men they shall receive the same rate of wages as men receive for doing such work or performing such duties.

6. The wages rates of all employees receiving more than the minimum rates herein prescribed shall be reviewed and such adjustments, if any, made therein as are equitable in the light of all the circumstances, and within ninety (90) days after the effective date hereof, the Paper Industry Authority shall report to the Administrator the action taken by all members of the industry under this section.

7. Workers who are physically handicapped are exempted from the provisions of Sections 1 and 4 hereof, but the number of such workers in any class shall not exceed five (5%) per cent of the total workers in such class.

Article VI—General Labor Provisions

1. No person under sixteen years of age shall be employed.

2. Employees shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint, or coercion of employers of labor, or their agents, in the designation of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection. No employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing, or assisting a labor organization of his own choosing. Employers shall comply with the maximum hours of labor, minimum rates of pay, and other conditions of employment, approved or prescribed by the President.

3. Without in any way attempting to qualify or modify, by interpretation, the foregoing requirements of the National Industrial Recovery Act, employers in this industry may exercise their right to select, retain or advance employees on the basis of individual merit, without regard to their membership, or non-membership in any organization.

Article VII—Accounting—Selling

1. The Paper Industry Authority shall, as soon as practicable, prescribe a standard method of accounting and costing for the industry and thereafter every member, shall use an accounting and costing system which conforms to the principles of, and is at least as detailed and complete as, such standard method.

2. Each member shall, on or before the effective date of this Code, publish and file with the Executive Authority of

his division or divisions complete lists or schedules of prices and terms and conditions of sale (including all differentials, discounts, trade allowances and special charges) of all products falling within the scope of the division offered for sale by such member, and shall so publish and file all subsequent changes therein or revisions thereof at least twenty-four (24) hours prior to the effective date of any such changes or revisions. Any member of the division may thereupon file, if they so desire, revisions of their lists of prices or schedules and terms and conditions of sale, which shall become effective simultaneously therewith. Such Executive Authority shall send to the Paper Industry Authority and to each member of the division a copy of such price lists or schedules and terms and conditions of sale, and changes or revisions thereof as so filed.

3. The Paper Industry Authority shall have power on its own initiative, or on the complaint of any member, to investigate any price for any product shown in any list filed with the Executive Authority of the division within which such product falls, by any member, and for the purpose of the investigation thereof to require such member to furnish such information concerning the cost of manufacturing such product as the Paper Industry Authority shall deem necessary or proper for such purpose. If the Paper Industry Authority after such investigation shall determine that such price is an unfair price for such product, having regard to the cost of manufacturing such product, and that the maintenance of such unfair price may result in unfair competition in the industry, the Paper Industry Authority may require the member that filed the list in which such unfair price is shown to file a new list showing a fair price for such product, which fair price shall become effective immediately upon the filing of such list. If such member shall not within ten (10) days after notice to it of such determination by the Paper Industry Authority file a new list showing such fair price for such product, the Paper Industry Authority shall have power to fix a fair price for such product, which fair price, however, shall not be more than the price of any other member at that time effective for such product and in respect of which the Paper Industry Authority shall not theretofore have begun an investigation or a complaint shall not have been made by any member. When the decision of the Paper Industry Authority fixing such fair price shall have been filed with the Executive Authority of the division within which such product falls, and the Paper Industry Authority shall have given notice thereof to such member, such fair price shall be the price of such member for such product, until it shall have been changed as in the Code provided. A notice of all decisions of the Paper Industry Authority under this Section, together with the reasons therefor, shall be filed with the President.

4. Except in fulfilment of bona fide contracts existing on the effective date of this Code, no member of the industry shall sell any such products at a price or prices lower than or upon terms and conditions more favorable than stated in his price list, published as hereinbefore provided.

5. Bona fide export sales shall be exempt from the provisions of Sections 2 and 3 hereof.

Article VIII—Reports—Statistics

1. Each member shall prepare and file with the Paper Industry Authority at such times and in such manner as it may prescribe, statistics of plant capacity, volume of production, volume of sales in units and dollars, orders received, unfilled orders, stocks on hand, inventory both raw and finished, number of employees, wage rates, employee earnings, hours of work and such other data or information as the Paper Industry Authority or the Administrator may from time to time require. Any or all information furnished to the Paper Industry Authority by any member shall be subject to checking for the purpose of verification by an examination of the books and accounts and records of such member by any disinterested accountant or accountants or other qualified person or persons designated by the Paper Industry Authority.

2. Except as otherwise provided in the Act, or in this Code, all statistics, data and information filed in accordance with the provisions of this Code hereof shall be confidential and the statistics, data and information of one member shall not be revealed to another member. No such data or information shall be published except in combination with other similar data and in such a manner as to avoid the disclosure of confidential information. The Paper Industry Authority shall arrange in such manner as it may determine for the publication currently to members of each division, of the divisional totals of orders received, unfilled orders, shipments, stocks of finished goods on hand and production.

3. The Paper Industry Authority shall make to the Administration such reports as the Administrator may from time to time require.

Article IX—General Provisions

1. If any member is also a member of another industry, the provisions of this Code shall apply to and effect only that part of his business which is included in this industry and if the products of any member fall in more than one division of the industry the provisions of any divisional code shall apply to and affect said member only as to products falling in such division.

2. If any provision of this Code or of any divisional code is declared invalid or unenforceable, the remaining provisions shall nevertheless, continue in full force and effect.

3. In the event that the divisional associations or Executive Authorities of any two or more divisions shall be unable to agree on any matter or matters affecting such divisions, the Paper Industry Authority shall decide such matter, and its decision, when approved by the Administrator, shall be binding on all concerned.

4. The Executive Authority of any division may formulate a complaint to the President of the United States, pursuant to the provisions of Subdivision (e) of Section 3 of the Act, that any paper, paperboard or pulp is being imported into the United States in substantial quantities or in increasing ratio to domestic production of any competitive paper, paperboard or pulp, on such terms or under such conditions as to render ineffective or seriously to endanger the maintenance of this Code, or of any divisional code subordinate hereto and deliver the same to the Paper Industry Authority which shall transmit such complaint to the President.

5. The Paper Industry Authority shall have power to investigate alleged violations of this Code and acts or courses of conduct by any member or divisional association which are or appear to be contrary to the policy of the Act or which tend or may tend to render ineffective this Code or any divisional code and to report the same with recommendations to the Administrator.

6. The Paper Industry Authority shall from time to time present to the Administrator recommendations based on conditions in the industry which will tend to effectuate the operation of this Code and the policy of the Act and in particular along the following lines:

(a) For the establishment of rules of Fair Trade Practice for the industry and the codification of its trade customs, and the enforcement thereof.

(b) For the establishment of a standard method for determining the current average weighted cost of any prod-

(Continued on page 46)

PULP and PAPER MAKING COSTS can be lowered by using Corrosion Resisting materials

NATIONAL USS STAINLESS AND HEAT RESISTING PIPE AND TUBES

Tubular parts and connections to tanks and vats and other paper-making equipment subject to corrosive solutions will give much longer life if made from NATIONAL U S S Stainless and Heat-Resisting Pipe and Tubes. Operating costs will go down accordingly. This is a report of experience. You, too, can secure the same results in your plant. Note these important facts: this material is highly resistant to corrosion, even under exposure to intense heat; it is especially resistant to the action of acids commonly present in paper making. It is made seamless from highest quality electric-furnace steel; furnished in a wide range of diameters, wall-thicknesses and lengths, with plain, upset, or otherwise formed ends. Stocks are kept ready for quick shipment. Investigate now how this useful product can cut your plant costs. NATIONAL engineers and chemists will gladly cooperate in solving your problems. Correspondence invited. Descriptive literature on request.

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CYCLONE FENCE COMPANY
FEDERAL SHIPBUILDING AND DRY DOCK COMPANY
ILLINOIS STEEL COMPANY
NATIONAL TUBE COMPANY
OIL WELL SUPPLY COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & R. R. COMPANY
UNIVERSAL ATLAS CEMENT COMPANY

Pacific Coast Distributors—Columbia Steel Company, Russ Building, San Francisco, Calif. *Export Distributors*—United States Steel Products Company, 30 Church Street, New York, N. Y.

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CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Adams, Mass.—The Brightwater Paper Company, recently organized, has concluded arrangements for lease of local mill of the Eaton Paper Company, Inc., and will occupy at once for new plant. Manufacture of similar line of paper stocks will be continued at the plant, including fine writing papers. The new company is headed by Stuart W. Webb, New York, and George W. Verow, Adams, as president and vice-president, respectively. Mr. Verow heretofore has been superintendent at the plant. It is proposed to develop large production at the mill.

St. Louis, Mo.—The Orchard Paper Company, 1113 South Twelfth street, has awarded general contract to Bumiller-Meyersieck, Inc., 1921 Marcus avenue, city, for extensions and improvements in plant on North Union avenue, including a new addition for increased capacity. Work will be placed under way at once. Estimated cost has not been announced. William R. Reese, 7127 Northmoor drive, is architect. Herman C. Orchard is president.

Ridgefield Park, N. J.—The Densen Carton Company, Industrial avenue, manufacturer of paper boxes and containers, has completed plans for a new addition to plant, to be one-story, 100 x 120 feet, including improvements in present mill. Increased capacity will be arranged. General contract for new building has been let to the Cannie Construction Company, 56 Bergen avenue, Ridgefield Park. Entire project is reported to cost over $40,000, with equipment.

Camden, Ark.—The Southern Kraft Corporation is running on a capacity production schedule, and has recently added about 200 men to working quota. The mill has adopted a four-shift, six-hour day basis, replacing a three-shift, eight-hour working day. Orders are maturing at a satisfactory rate, and it is proposed to hold to present operating schedule for an indefinite period.

Kalamazoo, Mich.—The Kalamazoo Vegetable Parchment Company, Parchment, near Kalamazoo, is considering extensions and improvements in power plant, including installation of additional equipment. It is proposed to proceed with program at an early date. Estimated cost has not been announced.

Chicago, Ill.—The Arvey Corporation, 3440 North Kimball avenue, manufacturer of card stocks and other paper products, cut-outs, etc., has filed plans for construction of new one-story addition to plant, 55 x 135 feet, reported to cost over $20,000, with equipment. It is understood that new unit will be used primarily for paper converting service. General contract has been let to Ullman & Nelson, 5940 North Barnard street. Rudbeck & Gross, 5334 Hutchison street, city, are architects.

Wellsburg, W. Va.—The S. George Company, Railroad street, manufacturer of paper bags and sacks, has plans for construction of new addition to plant on Yankee street, for which superstructure will soon be placed under way. Increased capacity will be arranged. No estimate of cost has been announced.

New York, N. Y.—The Newland Container Corporation, recently organized with capital of 100 shares of stock, no par value, will operate a local plant for the manufacture of paper boxes and containers, cartons, etc. New company is represented by Daniel Resnick, 1440 Broadway, New York.

Brooklyn, N. Y.—The Abety Paper Stock Company, 198 North Fourth street, has leased three-story building at 167-73 North Ninth street, and will occupy for new plant for storage and distributing service. It is understood that company will remove from present building to new location.

West Peru, Me.—The Berst-Forster-Dixfield Company, 410 Lexington avenue, New York, manufacturer of pulp and wood specialties, has approved plans for new two-story addition to mill at West Peru, 100 x 100 feet, to be used for storage and distributing service, reported to cost close to $50,000, with equipment. General contract has been let to the James Leck Company, 211 South Eleventh street, Minneapolis, Minn. As recently reported in these columns, building contract has been awarded to same company for new two-story addition to branch mill at Plattsburg, N. Y., operated by Standard Pulp Products Company, an affiliated interest, to cost approximately $100,000, with equipment. Company will also proceed with construction of a three-story addition to mill at Cloquet, Minn., 100 x 106 feet, to cost about $75,000, with equipment, and it is understood that same contractor will be in charge of this work. Homan F. Hallock, Oswego, N. Y., is architect and engineer for all buildings noted.

Monroe, Mich.—The Consolidated Paper Company has recently added to its working quota, and is now giving employment to more than 1200 operatives in all departments, on basis of 35 and 40 hours a week. Company is said to have secured orders to insure continuance on this basis for some time to come.

Orlando, Fla.—The Allen Bag Manufacturing Company, recently organized by F. W. and E. H. Allen, Orlando, and associates, is said to be planning early operation of local plant for manufacture of paper bags and containers.

Lockland, Ohio.—The Fox Paper Company is awarding contracts for equipment for new power plant at local mill and will push work to early completion. An award for pumps has been let to the Goulds Pump Company, Inc., Seneca Falls, N. Y.; for water-treating apparatus to the Cochrane Corporation, Philadelphia, Pa., and for piping, valves, etc., to the Crane Company, Chicago, Ill. A new turbo-generator unit will be furnished by the General Electric Company, Schenectady, N. Y. New plant will cost

over $80,000, with equipment. W. I. Barrows, 100 Edgewood avenue, Dayton, Ohio, is consulting engineer.

Baltimore, Md.—William A. Cohen & Co., 1618 Bank street, waste paper etc., plans alterations and improvements in warehouse unit on Ramsay street, to replace recent fire loss. No estimate of cost announced.

Enka, N. C.—The American Enka Corporation, manufacturer of cellulose rayon products, is planning installation of new equipment and repairs in present machinery, with replacement of worn and obsolete machinery, to cost close to $500,000, program to be carried out during the next 12 months. Company engineering department will be in charge. The plant is now giving employment to about 2400 persons in all departments, on 40-hour week production schedule.

Erie, Pa.—The Hammermill Paper Company, East Lake road, has work under way on new two-story addition to mill, for which general contract recently was awarded to the Henry Shenk Company, Twelfth street, and it is understood that completion is scheduled late in the fall. The new unit will provide for increased output and is reported to cost close to $100,000, with equipment.

Battle Creek, Mich.—The Michigan Carton Company is giving employment to a working force of about 350 persons in different departments and has advanced production schedule. The company has recently arranged for a 5 per cent wage advance.

Westport, Conn.—The Westport Paper-Board Company, Inc., recently organized by William Reeves, Southport, Conn., and associates, with capital of $50,000, plans operation of local plant for manufacture of paper and paperboard products.

Montreal, Que.—Canadian Industries, Ltd. has approved plans for a new addition to plant for the production of cellophane products, under contract with the du-Pont Cellophane Company, Inc., New York, N. Y. New unit will be one-story, and will be used primarily for expansion in moisture-proof plant division. New equipment will be installed. Work is reported to cost over $40,000, with machinery.

Sundsvall, Sweden—The Swedish Pulp Company, Ltd., Stockholm, Sweden, has adopted a maximum production schedule at its recently completed Ostrand wood pulp mill, Sundsvall district, giving employment to large working quota for a full output rating of about 100,000 tons of sulphate wood pulp per annum. The company is said to have closed contracts for the entire output of the plant for the remainder of this year, and well into 1934.

New Companies, Etc.

New York, N. Y.—Englander & Montlack, Inc., New York, has been incorporated with capital of 10 shares of stock, no par value, to manufacture and deal in paper products. New company is headed by Isidore Englander, 1137 Colgate avenue, Bronx; and Joseph Montlack, 3136 Godwin terrace, Bronx.

New York, N. Y.—Durable Fibre Sample Case Company, Inc. has been incorporated with capital of 100 shares of stock, no par value, to manufacture fibre boxes and containers. Company is represented by Samuel A. Brander, 405 Lexington avenue, New York, attorney.

New York, N. Y.—Resolute Paper Products Corporation, 1450 Broadway, has filed notice of increase in capital from $20,000 to $50,000, for general expansion.

Chicago, Ill.—Barson Paper Stock Company, 751 North Franklin street, has been incorporated with capital of 100 shares of stock, no par value, to deal in paper products of various kinds. The incorporators include M. R. Stevens and E. M. Bjornstahl.

New York, N. Y.—Bronx Card and Paper Company, Inc., has been chartered with capital of 100 shares of stock, no par value, to manufacture and deal in paper products of different kinds. Max Sirkus, 1206 Tinton avenue, Bronx, is principal incorporator.

Tavares, Fla.—The Central Florida Paper Corporation has been organized by P. B. Alsobrook and C. E. Duncan both of Tavares, to manufacture and deal in paper goods.

Brooklyn, N. Y.—The Cohen Brothers Card and Paper Company, Inc., has been incorporated with capital of $10,000, to manufacture and deal in paper products, cardboard specialties, etc. Morris Cohen, 36 Bristol street, Brooklyn, is principal incorporator and representative.

New York, N. Y.—Borough Paper Company, Inc., 621 Broadway, has recently arranged for change of company name to the J. K. Trading Corporation.

New York, N. Y.—The Winkson Company, Inc., has been organized with capital of 200 shares of stock, no par value, to manufacture and deal in paper boxes and containers. New company is represented by Clarence M. Davis, 342 Madison avenue, New York, attorney.

Brooklyn, N. Y.—The Kay Paper Company, Inc., has been chartered with capital of 100 shares of stock, no par value, to deal in paper products of various kinds. New company is represented by Irving D. Neustein, 277 Broadway, New York, attorney.

Detroit, Mich.—L. H. Zittel, Inc., 910 Majestic Building, Detroit, has been incorporated with capital of 1000 shares of stock, no par value, to deal in paper goods of various kinds. R. K. Zittel, 3345 Glynn Court, is one of the principal incorporators.

New York, N. Y.—The Arcturus Paper Corporation, New York, has filed notice of company dissolution under State laws.

Chicago, Ill.—The Becker Box Company, Inc., 140 North Dearborn street, has been organized with capital of 60 shares of stock, to manufacture and deal in paper boxes and other containers. Edward Beringer is one of the principal incorporators.

Boston, Mass.—The General Container Corporation has been chartered with capital of 5000 shares of stock, no par value, to manufacture and deal in cartons and other containers. James A. Eden, Jr., is president, and William L. Thompson, 11 Deerfield street, Boston, treasurer and representative.

New York, N. Y.—John R. Cassell Company, Inc., has been incorporated with capital of $10,000 and 300 shares of common stock, no par value, to manufacture and deal in blueprint papers and kindred processed stocks. John R. Cassell, 110 West Forty-second street, heads the company. Francis X. Trainor, 35 Hudson terrace, North Tarrytown, N. Y., is interested in the company.

Chicago, Ill.—The Paper Mills Company, 517 South Wells street, has filed notice of change of company name to the South Wells Street Paper Company.

President Approves Wall Paper Code

WASHINGTON, D. C., September 13—President Roosevelt on last Friday approved the wall paper manufacturing industry code.

In his recommendation to the President concerning the wall paper code, the Administrator called attention to the fact that the industry is small and that unless the consumption of its products greatly increase in the near future, the industry does not offer a very promising field for the reemployment of workers on a large scale. The reduction of the customary 50 hour week prevailing in the industry, to 40 hours under the code, will increase employment by approximately 15 per cent of the 1929 figures.

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LOSSES ALLOWED IN INCOME TAXES

Assuming that there will be no further Federal income tax legislation affecting returns for the year 1933, the deductibility of losses incurred from the sale of securities and those resulting from the operation of a trade or business, for this year, will be governed by the Revenue Act of 1932 as amended by provisions of the National Industrial Recovery Act. The present law in respect of such losses is summarized by Godfrey N. Nelson in the *New York Times* in general as follows:

Security Losses Deductible with Limitation—Losses incurred from the sale of stocks and bonds held for a period of two years or less are allowed as deductions, but only to the extent of gains from such sales.

Capital Losses or Capital Net Losses Deductible—Losses sustained from the sale of stock, bond or other property held by the taxpayer (other than a corporation) for a period of more than two years are deductible from the sum of the normal tax and surtaxes upon the taxpayer's net taxable income from other sources to an amount not exceeding 12½ per cent of such losses.

Losses Not Compensated by Insurance—Subject to the foregoing limitations, losses incurred in the taxpayer's trade or business, or sustained in any transaction entered into for profit, not compensated for by insurance or otherwise, are deductible; property losses not connected with the taxpayer's trade or business, arising from fire, storms, shipwrecks, or other casualty, or theft, not compensated for by insurance, are also deductible. These losses are not allowed to non-resident aliens.

Losses Sustained on Worthless Securities—Generally the cost of a security that has become wholly worthless through bankruptcy or receiverhip of the issuing corporation, or through other legal process, is deductible in the taxable year in which the loss is definitely determinable. A mere shrinkage in the value of securities, however, is not deductible except by a dealer in securities who has the right to "inventory" such property.

Losses From "Wash Sales" of Securities Not Deductible—If a taxpayer incurs a loss from the sale or other disposition of stocks or bonds and, within a period of thirty days before the date of such sale or thirty days thereafter, he has acquired by purchase or otherwise "substantially identical" stocks or bonds, the transaction constitutes a "wash sale" and the loss is not deductible.

Business Losses of Prior Years Not Deductible—A net loss sustained by a taxpayer in 1932, or prior years, from the operation of a trade or business is not deductible in 1933 or any subsequent year. A business or trading loss of one year may not now be carried forward as a deduction from the income of a succeeding year.

The limitation upon the deductibility of losses sustained from the sale or exchange of stocks and bonds held for a period of two years or less—Section 23 (r) I of the 1932 act—is a revival of a substantially similar provision of the 1917 act except for an addition to the effect that gains derived by a taxpayer from the retirement of his own obligations may be offset by such losses. The provision of the 1932 act that the excess of the taxpayer's loss, so derived, may conditionally be carried forward and deducted from the net income of the succeeding taxable year was repealed as of January 1, 1933, by provision of the Recovery Act.

The limitation upon deductibility of losses does not apply to a dealer in securities as to stocks and bonds acquired for resale to customers, nor to a bank or trust company incorporated under the laws of the United States or of any State or Territory. But, by a repeal provision contained in the Recovery Act, the limitation now applies to persons carrying on a banking business where the receipt of deposits constitutes a major part of such business. The limitation as to private bankers is also effective as to members of a partnership. Any loss disallowed as a deduction to a partnership is also disallowed as a deduction to members of a partnership.

A "capital loss" is a loss resulting from the sale or exchange of "capital assets"—property held by the taxpayer for a period of more than two years. If the taxpayer has also derived capital gains, the amount thereof must be deducted from the capital losses, and the excess of capital losses is the "capital net loss."

THE OLDER EMPLOYEE IN INDUSTRY

The problem of what to do about the employee who has grown old in a manufacturing organization and whose ability to do his usual work has lessened with the passing years is one which many an industry is finding serious. Just what business executives are doing to solve this problem is told in a new report by the Policyholders Service Bureau of the Metropolitan Life Insurance Company, entitled "The Older Employee in Industry," which presents the findings of a broad survey of the subject.

Five thousand manufacturing companies were asked whether they have definite plans for dealing with the problem of the older employee. Of those replying, 800, which employ more than a million workers, stated that they have such programs in operation. These organizations told in some detail what they are doing. Details of these plans were tabulated, analyzed, and prepared for presentation. According to this report, discovery of problem cases is the first detail to be considered. Usually, mere observation by foremen or supervisors is sufficient. Some companies, however, have plans for a systematic review of the records of employees when they attain a specified age. These plans are detailed in the report.

The next step, according to the report, requires decision as to what procedure is to be followed. Some companies, it was found, make it a practice to continue these employees at the same job, generally with adjustment in hours, wages, or duties. Sometimes special mechanical aid on the job is provided. Other companies make it a practice to transfer the older worker to another job. The factors which affect the selection of these new posts are discussed in this report; typical transfers are cited and described. Some organizations, the report states, provide special medical and safety supervision for older employees. These are set forth in some detail.

To Build New Power House

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., September 9, 1933.—Erection of a new power plant costing in the vicinity of $50,000 and decision to restore a 10 per cent cut in employees' wages were announced following the annual meeting of the Westminster Paper Company Limited at New Westminster, B. C.

The 10 per cent cut in wages went into effect in the plant on February 1 of this year on the understanding that when business conditions improved the reduction would be eliminated voluntarily. This situation having now been reached in the opinion of the firm, the wage scale has been restored to its former level.

The company also decided to proceed with construction of a new power plant at the cost of approximately $50,000. The present boiler house will be retained as an auxiliary steam unit and the complete new power plant for the generation of both steam and electric light and power installed. It is expected to save considerable in operation cost through this installation as in the past the company was merely generating its own steam at its boiler plant and buying electric power from the central station.

Payment of the usual 4 per cent stock dividend in quarterly instalments of 1 per cent commencing on October 1 was also authorized by the annual meeting.

Latex Fiber Industries Expand

BEAVER FALLS, N. Y., September 12, 1933—The Latex Fiber Industries, Inc., is erecting on its properties at Beaver Falls a new building of approximately 15,000 square feet to provide for a necessary expansion in its business. The company is operating under the Latex Fiber patents, and is planning to install in the new building a latex saturating machine which it has just purchased to broaden its line. It is expected that the building and the installation of the saturating machine will be completed within three months.

Tissue Men Elect Officers

At a general meeting of the Association of Manufacturers and Converters of Tissue at the Waldorf-Astoria Hotel, New York, August 30, the following officers were elected: A. B. Lowenstein, National Paper Products Company and Crown Willamette Company, 122 East 42nd Street, New York City; D. G. W. Hollister, A. P. W. Paper Company, Albany, New York; J. M. Conway, Hoberg Paper and Fibre Company, Green Bay, Wis.; Z. W. Ranck, The Crystal Tissue Company, Middletown, Ohio; A. A. Burrows, Burrows Paper Company, Little Falls, N. Y.; R. Rhoades, Scott Paper Company, Chester, Pa.; B. Picola, Gotham Tissue Corporation, 312 Locust Street, New York City.

A. B. Lowenstein as chairman of the steering committee acted as chairman of the meeting, and very briefly called attention to the developments since the first general meeting of the industry, held on May 16, 1933, when the present temporary organization was created. There seemed to be no doubt in his mind that the tissue industry, as a whole, was fully in accord with the spirit of the National Recovery program, and that the time had now come to organize on a permanent basis, so as to carry on the work more efficiently.

The chairman reported that on a basis of present records, 137 firms were eligible to membership in the Association of Manufacturers and Converters of Tissue, of which 90 had signified their intention of supporting the program adopted by the steering committee. It is estimated that these 90 represent roughly 90 per cent of the total tonnage of the industry, and approximately 60 per cent of the membership, which would probably be considered "truly representative" by the Administrator of the National Recovery Act.

At the meeting 30 representatives expressed themselves in favor of having machine operations limited to 120 hours per week, 26 representatives voting against and six declined to express an opinion.

Brightwater Paper Co. Leases Adams Mill

[FROM OUR REGULAR CORRESPONDENT]

ADAMS, Mass., September 11, 1933—The Brightwater Paper Company, a newly formed corporation has leased the paper mill of The Eaton Paper Company, Inc., of Adams, and will continue the manufacture and sale of fine writing papers at that mill. The mill organization which has operated for the Eaton Paper Company will continue.

The directors of the new company will be Robert W. Atkins, Frank F. Kolbe, Edward R. Stetinius, Stuart W. Webb, Robert R. Young, all of New York and Henry J. Guild of Adams.

The officers of the new company will be: President, Stuart W. Webb, New York; Vice President, George Verow, Adams; Secretary, Treasurer and General Manager, Henry J. Guild, Adams; Assistant Secretary, E. U. Keogh, New York.

J. A. Millar Chosen Vice Pres. and Treas.

On Wednesday, September 6, 1933, J. A. Millar was elected vice-president and treasurer of the Perkins-Goodwin Company, to succeed the late Mr. John Atkins who died last week. Mr. Millar has been vice-president for the last five years. He was formerly president of the Scandinavian Pulp Agency before coming with Perkins-Goodwin Company five years ago and is well-known in pulp and paper circles.

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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

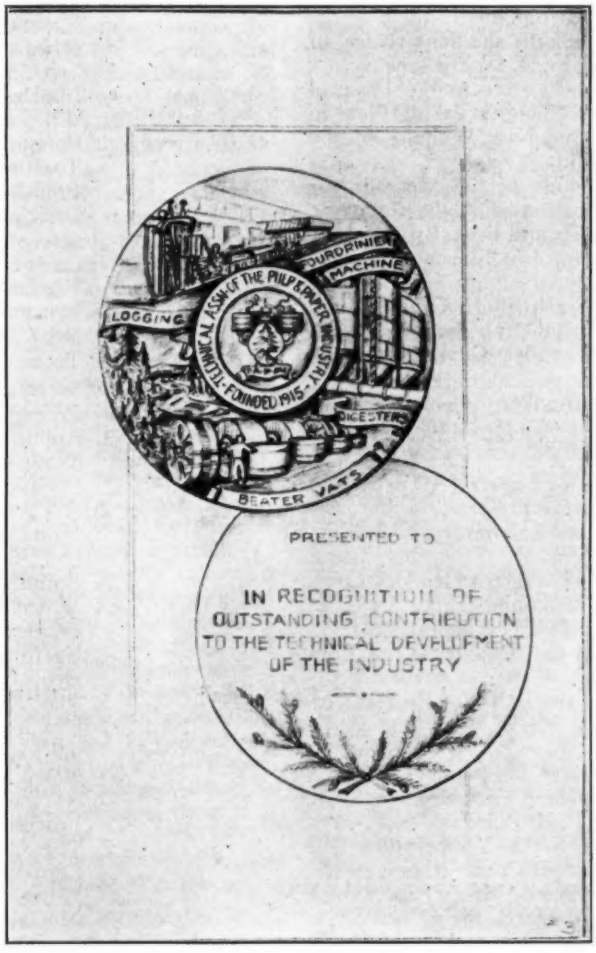
Ernst Mahler to Receive TAPPI Medal

By unanimous vote the executive committee of the Technical Association of the Pulp and Paper Industry, on recommendation by its Committee on Awards, has decided to confer honorable mention and the TAPPI Medal on Ernst Mahler, vice president of the Kimberly-Clark Corporation, Neenah, Wis.

The TAPPI Medal is given in recognition of outstanding contributions to the technical development of the pulp and paper industry. Only two other individuals have received the medal, namely, Ogden Minton, inventor of the Minton vacuum drier, and W. H. Mason, inventor of the Masonite process. Both of these awards were made in 1928.

Mr. Mahler is a graduate of the Technische Hochschule at Darmstadt, Germany. He came to this country in 1910 an was associated with the Badische Company as one of their technical experts from 1910 to 1912. He then became associated with the Kimberly-Clark Corporation at Neenah, and is at present executive vice president in charge of manufacture of this organization. He is also president of the Kotex Company and the Kleenex Company; vice president of the International Cellucotton Products Company and the Valley Iron Works; secretary of the Spruce Falls Power and Paper Company and Bonifas Lumber Company; and director of the Masonite Corporation.

In the field of education, Mr. Mahler is a trustee of Lawrence College and president of the Board of Trustees of the Institute of Paper Chemistry, Appleton, Wis.



TAPPI Medal for Outstanding Contribution to the Technical Development of the Pulp and Paper Industry

He is also one of the founders of the Technical Association of the Pulp and Paper Industry.

The TAPPI Medal will be presented to Mr. Mahler at the banquet held during the fall meeting of the Technical Association at Appleton, Wis., on September 27, 1933.

New Members

The executive committee of the Technical Association of the Pulp and Paper Industry have announced the following elections to membership:

Alfred Bryant, Kalamazoo, Mich., was for seven years an apprentice with Spicer Brothers, Alton, England, following which he was for 25 years with the Bryant Paper Company, Kalamazoo, Mich., where he held positions from screen boy to superintendent. During the past few years he has been superintendent of the Watervliet Paper Company, Watervliet, Michigan, and the Newton Falls Paper Company, Newton Falls, N. Y.

Dale S. Chamberlin, technical engineer, paper division, National Oil Products Company, Harrison, N. J., is a graduate of the University of Michigan, Lehigh University, and the Imperial College (London). He was formerly a professor at Lehigh University and technical director of R. K. Laros Silk Company, Bethlehem, Pa.

Guthrie S. Mabrey, assistant chemist, Southern Kraft Corp., Mobile, Ala., is a graduate of the University of Alabama and the Case School of Applied Science, Cleveland, Ohio.

TAPPI Fall Meeting Program

Appleton, Wis., September 26-28, 1933

Tuesday, September 26

8:30– 9:30 A.M. Registration—Conway Hotel and Institute of Paper Chemistry

9:30–12:30 P.M. Presentation of Papers (All Papers on this program are presented by the Institute of Paper Chemistry. Four are Ph.D. theses.)

1. An Alkaline Process for Obtaining High Yields of Pulp from Aspen Wood, by R. L. Davis
2. A Study of the Factors Influencing the Chlorination of Mitscherlich Sulphite Pulp, by E. H. Voigtman
3. A Contribution to the Knowledge of Rosin Sizing, by H. W. Bialkowksy
4. Observations Relative to the Physical and Chemical Changes Taking Place in the Cooking of New White Rags, by E. R. Laughlin
5. A Critical Study of the Methods for the Determination of Alpha Cellulose, by H. F. Lewis and B. L. Browning
6. Colloidal Control in Starch Sizing, by B. W. Rowland

1:00 P.M. Luncheon, North Shore Country Club

2:00-5:00 P.M. Golf Tournament, trap shooting, swimming at Alexander Gymnasium, and mill visits

7:00 P.M. Dinner and Smoker

Wednesday, September 27

9:00-12:30 P.M. Presentation of Papers (All papers on this program are presented by the Forest Products Laboratory, Madison, Wisconsin)

1. Penetration of Western Hemlock Chips by Calcium Bisulphite Liquor, by C. E. Hrubesky and G. H. Chidester
2. Chemistry of the Alkaline Wood Pulp Processes IV. Is There a Critical Temperature for the Sulphate Process? by J. S. Martin, M. W. Bray and C. E. Curran
3. Forest Products Laboratory Research on Paper Machine Variables, by W. A. Chilson and P. K. Baird
4. Influence of Stock Temperature and Hydrogen ion pH Concentration on the Sheet Properties of Kraft Paper Sized with a Special Starch Sizing, by W. A. Chilson, F. A. Simmonds, and P. K. Baird
5. Comparative Serviceability and Processing Effects of Oval, Cast Iron and Circular Rods in the Rod Mill, by C. E. Hrubesky, P. S. Billington and P. K. Baird
6. Effect of Relative Humidity on the Moisture Content and Bursting Strength of Container Boards, by C. O. Seborg, R. H. Doughty and P. K. Baird.
7. Capillary Rise of Water in Fibrous Sheets and Possible Applications, by F. A. Simmonds.
8. Some Factors Affecting the Interweb Adherence of Single Plies used in Laminated Sheets, by R. H. Doughty and P. K. Baird.
9. Properties of Groundwood Pulp. I. Chemical Properties of the Screen Fractions of Black Gum and Slash Pine Groundwood Pulps. II. Effect of Varying the Proportions of Fiber of Various Size upon the Physical Properties of Groundwood Pulp, by E. R. Schafer and Matti Santoholma.

9:00-12:30 P.M.

1:00 P.M. Luncheon.

2:00-5:00 P.M. Mill Visits or Golf.

7:00 P.M. Banquet, North Shore Country Club. Toastmaster, Dr. Henry M. Wriston, President of Lawrence College.
Principal Speaker, F. J. Sensenbrenner, president of the Kimberly Clark Corporation.
Presentation of the TAPPI Medal to Ernst Mahler.
Brief Address by past presidents of the Technical Association.

Thursday, September 28

9:30-12:30 P.M. Presentation of Papers.

1. Application of Statistical Methods to Testing of Pulp and Paper, by F. A. Simmonds and R. H. Doughty.
2. A Comparison of Sheet Machines for Pulp Evaluation, by R. H. Doughty and C. E. Curran.
3. Emulsified Paraffin Wax Sizes, by R. M. Cobb, D. S. Chamberlin and B. A. Dombrow.
4. Usefulness of Pulp Color Measurements in Paper Making, by L. C. Lewis.
5. The Razek-Mulder Analyzer and its Use for the Measurement of Color in the Paper and Pulp Industry, by R. S. Hatch and H. A. Hauff.
6. A New Color Comparator, by J. W. Forrest.
7. The Commercial Evaluation of Pulp Cord-Wood, by M. A. Youtz and B. E. Lauer.
8. Vocational Education by H. G. Noyes.
9. Report on Tests of Regular and Stabilized 18-8 Alloy Welds in Sulphite Liquor by TAPPI Materials of Construction Committee, J. D. Miller, Chairman (by title).
10. Analysis of Alkaline Black Liquors of Varying Sulphidity by the Ammonia Distillation Methods, by M. A. Heath, M. W. Bray and C. E. Curran (by title).
11. X-Ray Investigation of the Penetration

(Continued on page 42)

Pulp Testing and Specification Investigation*

By H. C. Schwalbe [1]

During the fall meeting of the Technical Association, 1932, in Holyoke, a symposium on pulp classification and specifications was held which aroused very much interest. The overwhelming opinion was that there was a great necessity for such work, but that considerable difficulties had to be overcome. Some speakers thought that specifications would be impossible as long as the majority of sellers and purchasers of pulp would not use one single standard testing method.

Unfortunately, there are in existence different strength testing procedures which are similar in principle, but have many variations in details, because such methods were worked out in individual mill laboratories to meet their own special use. Other speakers expressed their conviction that such differences in testing procedure were not important enough to make the pulp specification work impossible. As long as certain essential features were observed in such testing methods, correction factors might be worked out which would make the results of one method comparable to another.

In a discussion about such a possibility, some members of the Delaware Valley Section thought that it would be interesting to find out, by an actual investigation, how different laboratories would test and classify the one and same lot of pulp. Such a study might be of help in the work of the pulp specification committee of our national organization, and it would most probably offer many suggestions to the members of this section.

An inquiry to all members to cooperate in such a study received a very fine response. Practically all of the laboratories equipped for strength testing agreed to contribute tests, and very fortunately some laboratories outside of our section offered to cooperate. These very valuable tests from American Writing Paper Company, Brown Company, the Bureau of Standards, and The Mead Corporation, naturally offer a splendid opportunity for comparison.

Before we report about the results of the tests, we wish to point out that the mills were asked to use their own procedure of testing and evaluating the pulp. The idea was to see how far the mill methods could be used for pulp specification work. Of course, it would be desirable to have to change the present laboratory standards as little as possible. But, we also expected that the tests made without detailed instructions would vary considerably, and as you will see, the figures as we received them do not appear to be tests on the same pulp at all. Still, the same happened with other cooperative studies of physical, or chemical methods, and, therefore, we should not be disappointed.

Another reason for not specifying one method for these tests was the hope that the pulp specification committee would get more information about which pulp qualities might be considered as essential by different branches of the paper industry. The pulp which was sent out to all the contributing laboratories was taken from an average lot of standard bleached Weyerhauser sulphite, without the knowledge of the manufacturer. The pulp sheets were divided and mixed, in a similar manner as in a coal analysis, to make certain that each laboratory would receive a correct sample.

Now as to the tests which will be presented first in the form in which they were received; then coordinated, after a recalculation to the same units. This will be followed by the application of some proposed formulae, such as the beater value, which was done in the hope of coming to some simpler expressions. Finally, some suggestions as to the cause of variations will be given.

Comparative Laboratory Results

In Table I you will find very complete and carefully made tests, but you will also note that the description of the beating will not tell very much to the outsider who does not know the performance of this beater, which is not of standard design. The freeness which might to some extent tell what happened in this beating had to be made with an available instrument, the Williams 50/50 type of 1924. The laboratory most kindly went to great trouble to determine the freeness curves at different consistencies, because the 50/50 type has such a short range that for each of the tests, i.e., in the unbeaten state, after beating for 2¾ hours, and after 5½ hours, different consistencies had to be applied. D. S. Davis has published very valuable correction curves for all freeness testers, but I could not find any suitable curve for this case. I stress this point because it shows how instruments, which might be good in some respects, handicap progress considerably if they are not of standard construction, or if corrections cannot easily be applied. In the meanwhile, Dr. Davis very kindly made a special calculation. The corrected data and the comparative figures for the other freeness testers are:

	Williams 50/50	Williams Precision	Canadian Standard	Schopper Riegler	
				Degrees	cc
Unbeaten	240	12	740	14	860
Beaten for 2¾ hr.....	167	94	357	36	640
Beaten for 5½ hr.....	58	302	130	60	400

The determination of pulp strength in the unbeaten state has long since been a subject of controversy. The laboratory has made tests of the unbeaten pulp in two different basis weights to prove that the specification of the basis weight is of great importance. For example, the "bursting area," calculated according to Bergman, is 4.53 if sheets of 66.1 pounds are used, but 6.29 if the sheets weigh 127.3 pounds and for "tearing area" the respective figure are 63.5 and 107.

In Table II you find tests made in a Valley Iron Works

* Presented at the May 19, 1933 meeting of the Delaware Valley Section of the Technical Association of the Pulp and Paper Industry, Philadelphia, Pa.

[1] Member TAPPI, technical director, Dill & Collins, Inc., Philadelphia, Pa.

TABLE I (Beater Method)
TESTS AS RECEIVED
LABORATORIES USING THE BEATER METHOD

Lab. Index Expressed as:	Basis Weight 25 x 40 500, Lbs.	Bursting Strength, Points	Fold. Strength Long Direction Double Folds	Fold. Strength Short Direction Double Folds	Tensile Strength Long Direction Kg.	Tensile Strength Short Direction Kg.	Tear. Strength Long Direction Grms.	Tear. Strength Short Direction Grms.	50/50 Type Williams Consist, Per cent	50/50 Type Williams Freeness, cc	50/50 Type Freeness Consist, Per cent	50/50 Type Freeness Freeness, cc	Preparation of Pulp
BS	66.1	6	....	....	.9	.9	58	60	1.66	190	2.155	139	Unbeaten
	127.3	16	3	3	3.0	2.2	208	184	...	....	....	...	
	65.2	43	1100	700	5.6	5.4	128	123	.78	133	1.3	65	2¾ hr. beating
	64.9	62	3600	3300	7.9	7.8	90	90	.24	91.5	.60	35	5½ hr. beating

TABLE II (Beater Method)

Lab. Index Expressed as:	Beating Time, Mins.	Freeness Williams 1925B CC	Mullen Factor, 24 x 36 480, Pts.	Tearing Factor, Grms., 24 x 36 480	Freeness CC	Mullen Factor, Pts., 24 x 36 480	Tear Factor, Grms., 24 x 36 480
		Test Pulp			Standard Pulp for Comparison		
C	0	710	.258	.214	710	.232	.168
	15	650	.482	.238	635	.303	.184
	30	555	.822	.234	500	.396	.195
	45	465	.900	.212	400	.583	.165
	60	295	.950	.199	300	.620	.145
	75	160	.845	.166	210	.670	.123
	90	110	.985	.148	135	.715	.113

TABLE III (Beater Method)

Lab. Index Expressed as:	Beating Time, Mins.	Basis Weight 25x38-500, Lbs.	Burst. Strength Pts.	Mullen Ratio, Pts., 25x38-500	Fold			Tensile		
					High	Low	Ave.	High	Low	Ave.
					Double Folds					
N	0	61.8	7.1	11.5	4	3	3.5	3.4	3.0	3.2
	15	61.4	39.7	64.6	213	188	200	19.5	18.0	18.8
	30	57.6	50.7	88.0	496	351	424	23.5	21.4	22.5
	50	58.6	57.2	97.6	2320	1662	1991	28.4	25.9	27.2

TABLE IV (Beater Method)

Lab. Index Expressed as:	Beating Time, Mins.	Slowness Own Instrument, Secs.	Burst. Ratio, Pts., 24x36-480	Tear Ratio, Pts., 24x36-480	Total Strength, .5 Mullen Ratio Plus .25 Tear ratio	Specks A Sliver Count, I. P. Co. Method
Y	0	1	20	84	31	1.8
	10	2	34	226	73	..
	20	4	59	275	98.5	..
	30	7.5	71	224	91.5	..
	40	14	81	200	90.5	..
	50	28	84.5	180	87.25	..
	60	51	84	170	84.5	..

TABLE V (Ball Mill Method)

Lab. Index, Expressed as:	Beating Time, Mins.	Freeness, Schopper, Riegler, 5 grm. oven dry cc.	A. W. Co. Strength Factor, Pts.	Tear			Fold			Dirt (Specks per gram)			
				Mullen Ratio, Pts., 25x40-500	Direct, Grms.	Ratio, Grms., 25x40-500	Direct, Double Folds	Ratio, Folds, 25x40-500	Color	No. 1 Fine	No. 2 Medium	No. 3 Large	Appar. Specific Gravity
A	50	595	117	68	208	2.29	1620	17.7	73	7.2	.166	.033	.691

TABLE VI (Ball Mill Method)

Lab. Index Expressed as:	Beating Time, Mins.	Slowness Own Method, Secs.	Shrinkage		B-Strength Factor		Tear Ratio	
			Set 1	Set 2	Set 1 Pts.	Set 2 Pts.	Set 1 Grams 24x36-480	Set 2 Grams 24x36-480
B	0	.84	4.7	4.7	33	34	126	116
	35	5.5	13.4	13.9	105	106	223	219
	60	21.0	19.2	20.4	124	119	211	193
	75	38.1	21.2	21.5	124	124	183	194
	100	109	29.5	31.0	129	122	185	184

TABLE VII-a (Ball Mill Method)

Lab. Index Expressed as:	Treating		Basis Weight, 25x38-500	Mullen Ratio, 25x38-500	Tear, Grams	Fold
	Mins.	Pounds				
DM	1½	45	80.3	64.2	249 (?)	797
	1½	75	68.2	85.4	142	654
	1½	167.5	73.3	97.8	116	957
	1½	175	73.3	99.0	88	1377

TABLE VIII (Ball Mill Method)

Lab. Index Expressed as:	Beating Time, Mins.	Freeness, Schopper, Riegler Beating Degree	Mullen Ratio, Pts., 25x38-500	Tear Ratio, Grms., 25x38-500
G	60	18	.46	1.72
	120	28	.57	1.62
	180	51	.76	1.57
	240	69	.79	1.47
	300	82	.69	1.25
	360	88	.61	1.35

experimental beater. The evaluation of these tests is easier, because a fairly standardized equipment was used, but later on you will see that the different models as brought out by the Valley Iron Works do not check closely enough. The freeness tests are made with an older instrument, but one where correction curves are available. You will note that this laboratory prefers to express the test on a ratio basis, the test divided by the basis weight and not the direct readings as in Table I. Laboratory "C" is the only one that gives tests on another pulp, which they know very well. This is a very good idea, but it does not help in this investigation, as the reference pulp is unknown to the committee. We should discuss this procedure later on, because it might help us out of our difficulties. If we would report the data on a new pulp to be bought, or classified, together with the data of one generally well-known pulp, it would be much easier to understand each other.

In Table III, very good tests are given by a laboratory using the latest model of the Valley Iron Works beater. This machine is reported, from different places, to work very satisfactorily. In comparing Tables II and III, you will note that different beating times and expressions were chosen, and that the test figures look quite different. The selection of tests is also interesting, as no tear tests are made, but tensile strength determinations are. No freeness tests are given.

In Table IV, again, tests made with an older type of Valley Iron Works beater are reported. This laboratory had to use a home-made sedimentation tester for the freeness determination. It is the only one stating the total strength figure.

In Table V, only one beating test is found necessary to characterize the stock, because the pulp is of a standard type and this one point of the strength curve was distinct enough for this laboratory, which has had much experience. The freeness test was made with an amount which is too large for using the existing correction curves. The color was probably determined on a disc machine of the Brown Company type.

In Table VI more ball mill tests are reported. This laboratory created its method almost at the very beginning of all pulp strength testing. They had to devise procedures of their own, because no standard methods were available. The slowness is determined in a home-made instrument. In none of the other tests are shrinkage values given. We should discuss their value later on. The "B" strength factor is a figure calculated from a special Mullen test and the shrinkage values. The tear ratio is expressed as usual. The laboratory very kindly submitted two sets of tests, beaten at different times, to show how closely such a test will check in a high-grade laboratory having much experience.

In Table VII other ball mill tests are given, and, again duplicate tests were made using two different jars of the two-jar machine of the Abbe Engineering Company. The breaking length, stretch and apparent specific gravity values were determined only for one set.

In Table VIII it is interesting to note how much longer beating time this laboratory gives to the pulp.

Table IX is particularly noteworthy. The same pulp as used for Set 1 in the tests of Laboratory "D" (Table VII) was sent to this company, and then made into sheets in their British sheet machine equipment. The pulp was only dif-

TABLE VII (Ball Mill Method)

Lab Index Expressed as:	Beating Time, Mins.	Freeness, Schopper, Riegler		Basis Weight		Mullen Ratio		Tear		Fold		Breaking Length M.	Stretch, Per cent	Appar. Specific Gravity Grm./m³ Thickness
		Set 1, cc.	Set 2, cc.	Set 1 25x38-500, Lbs.	Set 2	Set 1 25x38-500, Pts.	Set 2	Set 1 Grams	Set 2	Set 1 Double Folds	Set 2			
D	22.5	860	855	70.16	69.33	63.4	60.6	161	171	842	662	3250	5.5	.665
	45	790	785	70.34	69.17	83.4	84.5	137	130	1146	1349	4750	4.88	.697
	67.5	620	620	67.02	68.20	100.1	101.3	114	115	1685	1902	5555	5.25	.775
	90	520	520	65.04	68.67	109.5	106.8	82	85	2060	2207	6050	3.88	.839

ferent in the respect that it had aged a few days before it was tested. The freeness readings are somewhat different, if one assumes that the correction curves are correct. Please note the difference in the test data, which will be discussed further later on. The same company then subjected the pulp, as sent to them in the unbeaten state, to treatments in their laboratory jordan. The treatments were so chosen that the same freeness was reached as for the pulp beaten in the ball mill. To do this, the pressure on the jordan was changed. It is interesting to note that the samples of lower freeness of the jordaned stock are lower in tear, burst, stretch and apparent specific gravity, than the ball-milled samples.

Some of the jordaned stock was sent back to laboratory "D" and there formed into sheets, and the same observation was made in the strength tests. It is particularly interesting to note how well the tests in laboratory "M" agree, and again those made in "D". But the figures are not directly comparable, because they are expressed in different ways, and more important, they are of different range. Why they are not uniform will be discussed later.

In Table X another ball mill test is given, also by a very experienced laboratory. The tests are expressed well; the only objection could be the exceptionally low basis weight, which most probably will influence the results and that the milling was done at an unusually low consistency.

TABLE IX (Ball Mill Method)

Lab Index, Expressed As:	Beating Time, Mins.	Freeness Canadian Tester, cc.	Basis Weight, Gr./m²	Burst, Factor, Lbs.x70, Grm./m²	Tear Factor, Grms., Grm./m²	Breaking Length, M.	Stretch, Per cent	Fold Double Fold Maximum	Fold Double Fold Minimum	Fold Double Fold Average	Appar. Specific Gravity, Grm./m² Thickness
Mb PULP BEATEN IN BALL MILL											
	22.5	575	65.2	22.0	143.5	2270	2.47	50	30	40	.652
	45	445	64.0	27.9	147.8	3455	3.27	455	193	314	.688
	67.5	265	65.6	37.7	128.0	4220	3.82	973	462	680	.820
	90	220	63.2	40.6	115	4760	4.05	1195	933	1029	.810
Mj PULP BEATEN IN LABORATORY JORDAN											
Time, Mins.	Press-ure, Lbs.										
1½	45	550	64.8	22.4	158.1	2590	2.70	97	29	72	.648
1½	75	485	62.0	27.4	121.0	3750	2.50	285	155	224	.731
1½	167.5	267	60.4	32.9	93.4	4650	3.13	1042	854	992	.690
1½	175	235	62.8	34.4	84.0	4865	3.13	1455	1098	1276	.760

TABLE X (Ball Mill Method)

Lab. Index Expressed as: R	Beating Time, Mins.	Freeness Green, cc.	Basis Wt., 24x36-500	Mullen Direct, Pts.	Mullen Ratio, Pts., 24x36-500	Tear Direct, Grams	Tear Ratio, Grams, 24x36-500	Appar. Specific Gravity, Grm./m² Thickness
	0	760	38	..	..	..	..	..
	75	470	38	30	79	57	1.50	.79
	30	700	38	20	53	95	2.50	.63
	30	470	38	30	79	57	1.50	.79
	120	230	38	33	87	447	1.24	.90

TABLE XI (Ball Mill Method)

S Lab. Index, Expressed as:	Treatment	Drainage Factor, Acc. to Campbell	Basis Weight, Grm./m²	Burst, Factor, Gm. cm², Grm./m²	Tear Factor, Gms., Grm./m²	Break. Length, M	Density	Absorbency Factor	Dirt, PPM.	Shives, PPM.
	Unbeaten	.94	59.2	9.2	131	1630	.54	24.2	1.58	..
	Beaten	3.78	59.9	30.4	126	4470	.65	2.8	...	..

CO-ORDINATION OF THE TESTS

1. Data about the equipment used for testing.

TABLE XII

MILLS USING THE BEATER

Lab. Index	Type of Beater	Furnish	Wt. on Bed Plate	Consistency	Roll Speed, R.P.M.	Sheet Machine	Pressing	Relative Humidity At Test
BS	.....	2 lbs.	....	4%	...	Bureau of Standards	200 lbs. 3 mins.	65%
C	Valley	360 gms. bone dry	27.85	1.8%	625	Valley	75 lbs.	....
N	Latest Valley	1½ lbs.	19.00	3.3%	...	Williams	200 lbs.	....
ℓ	Valley	400 gms. oven-dry	20.00	1.5%	560	Appleton	75 lbs. 1 min.	40.8%

In the laboratory "N" the circulation speed of the stock is observed. The time for a particle of pulp to travel from the point of emergence from the hood to the point of entrance to the roll is measured.

TABLE XIII

MILLS USING THE BALL MILL

Lab. Index	Type Mill	Speed	Consist. in Mill	Wt. of Stones, gms.	Sheet Machine	Pressing	Relative Humidity
A	Abbe C	52	4.5%	....	Date	75 lbs.	65%
B	.....	..	.....	....	Own	.....	45%
D	Abbe C	56	4.5% oven-dry	4200	Williams	180 lbs. 2 mins.	50%
G	.....	..	.....	....	.....	.....	....
M	.....	..	.....	....	British	5 mins. 50 lbs. 2 mins. 50 lbs.	....
R	Abbe C	70	2%	6800	Valley	100 lbs.	65%
S	.....	..	.....	....	British, same as M	.....	....

Finally, in Table XI, tests using the British Sheet Machine are reported. The determination of the unbeaten strength was made under very good conditions. Different tests, or test expressions are applied which will warrant a discussion. Such new tests are very stimulating, but they also create new difficulties in correlating them to others, as long as correction curves are not given.

Summarizing these "tests as received," I would like to say that very fine and interesting data were reported showing a decided progress over similar tests made years ago. But, the skeptical observer might conclude that pulp specifications based on such reports are hopeless. For example, the reported highest figures in the burst test column read as follows: 62, .95, 57.2, 84.5, 68, 125, 107, .79, 40.6, 34.4, 33, 59.9. It is obvious that the data will have to be calculated to one basis to be fair. This was done for the Mullen ratio, which is the Mullen in pounds per square inch, or points, divided by the basis weight 25x40-500. This expression was adopted as standard by TAPPI. The data are compiled in Table XIV.

Correlation of Data

As you will see, the figures are now much more comparable. But one difficulty arises at once; what is the corresponding beating treatment to 165 minutes in the "BS" method, 30 minutes in the "C" method, etc.? It is clear, that ball mills, and beaters, and jordans, of different constructions do not work in the same way, and the usual plotting of Mullen ratio versus the beating time is worthless. What we need, is to find a measure which will define a beating interval giving the same effect. In one beater this may be 165 minutes, in another 15 minutes, or in ball mills "B" needs 35 minutes, "D" 22.5 minutes and "G" 120 minutes to get a similar result.

In Table XIV I tried, therefore, to arrange the data according to such beating intervals of equal effect. You will find on the same line, the tests which probably correspond to each other. So, in the second line, laboratory "C" was beating 15 minutes and reached 40 in Mullen

TABLE XIV.—A. MULLEN RATIO IN RELATION TO BEATING TIME

2. All data are expressed as "Mullen ratio" or the actual reading ofthe burst tester in points, divided by the basis weight 25 x 40—500

Lab. BS Beating Time		C		N		Y		A		B		D		G		M Ball Mill		M Jordan		MD Jordan		R		S	
M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	Lbs.	Test	Lbs.	Test	M.	Test	M.	Test
0	12.55	0	21.4	0	10.9	10	16.6	...	....	0	13.6	...	...	...	...	...	...	....	....	....	...	...	....	0	18.55
...	....	15	40	...	....	20	49	...	....	...	....	...	...	60	43.6	22.5	44.5	45	45.1	....	...	30	45.75	...	....
165	65.9	30	68.2	15	61.4	30	59	...	....	35	60.5	22.5	60.1	120	54	45	56.25	75	55.3	45	61	...	....	...	61.50
...	....	45	74.75	...	....	40	67.2	50	68	...	....	...	...	180	72.1	...	....	167.5	66.3	....	...	75	68.25	...	....
...	....	60	78.75	30	83.5	50	70.1	...	....	60	74.5	45	79.5	240	75	67.5	76.0	175	69.15	75	81.1	120	75.1	...	....
...	....	75	70.0	...	....	60	69.6	...	....	75	83.0	...	...	300	65.5	...	....	....	....	....	...	...	....	...	....
330	95.55	90	81.75	50	92.6	...	....	...	....	...	....	67.5	95.5	360	57.5	90	81.75	....	....	167.5	92.75	...	....	...	....
...	....	..	.....	...	....	...	....	...	....	100	94.5	90	104	...	...	...	....	....	....	175	94	...	....	...	....

ratio, laboratory "Y" was treating the pulp for 20 minutes and got 49, laboratory "G" used 60 minutes beating time and reports 43.6, laboratory "M" in 22.5 minutes reaches 44.5, and with 45 pounds pressure on the jordan gets 45.1, and finally laboratory "R" used 30 minutes and got 45.75. Such figures are not so bad if one remembers that our study was undertaken without exchange of instructions, just using the "raw" mill methods.

The comparison for unbeaten pulps is not so good, as you see. We find here tests of 10.9, 12.55, 16.6, 18.55 and 21.4 or just about 100 per cent difference from the lowest to tne highest. As is sufficiently proven, such irregularities must arise if the most rigid specifications are not applied, as most probably was the case in some of the tests.

If we follow again the beaten test, lines 3, 4 and 5 give fairly uniform results, but in the next line poor tests again appear. The 75 minutes test of Laboratory "C" is probably erroneous, and the tests of laboratory "G" for 300 and 360 minutes should not be included, because the freeness reached was much lower than that of other laboratories, as you can see from Table XV. If these tests are excluded, we still see that the Mullen ratio maximum is varying from 75.1, 81.75, 92.6, 94, 95.55 to 104. If we forget for the moment the discrepancies in the highest figures, where variations of test conditions are most pronounced, and draw the curves of the tests as they probably should be arranged according to beating intervals of the same effect we get Fig. 1.

This graph gives hope, again. The curves are of about the same shape, if one is modest in his expectations. If these curves would for a majority of pulps show the same relation, then one might be able to calculate correction factors with which a laboratory, writing a specification, would correct its own test and then use the same curve as the pulp manufacturer would apply in selling his pulp.

The difficulty of interpreting the value of a beating interval correctly, leads to the suggestion to plot the strength test against freeness, as this is done very often. In Table XV all available data are correlated, but the picture is in complete as the freeness data given by the laboratories "Y" and "B" could not be corrected to any other standard instrument, and laboratory "N" did not report freeness at all. Further, it is doubtful if freeness data of stock beaten in ball mills, beaters, or jordans are comparable. The experiments of mixing stuffs of different fiber length and freeness together in such a manner that the same freeness reading is observed, are well known. Naturally, freeness tests applied to one pulp processing machine are very valuable.

The data of Table XV and Fig. 2 show more variations than the previous ones, but the shape of the curves is similar. It is interesting to note that most laboratories process their pulp not lower than to 515 freeness, in contrast to other testing procedures where one often goes down to 250

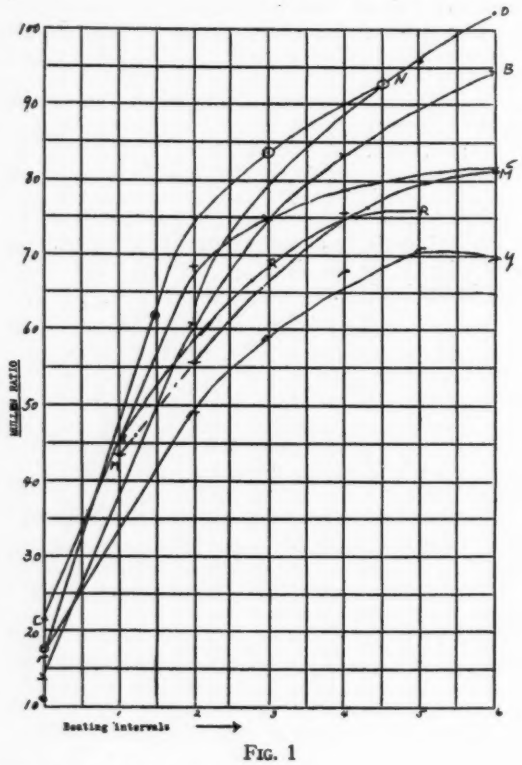


FIG. 1

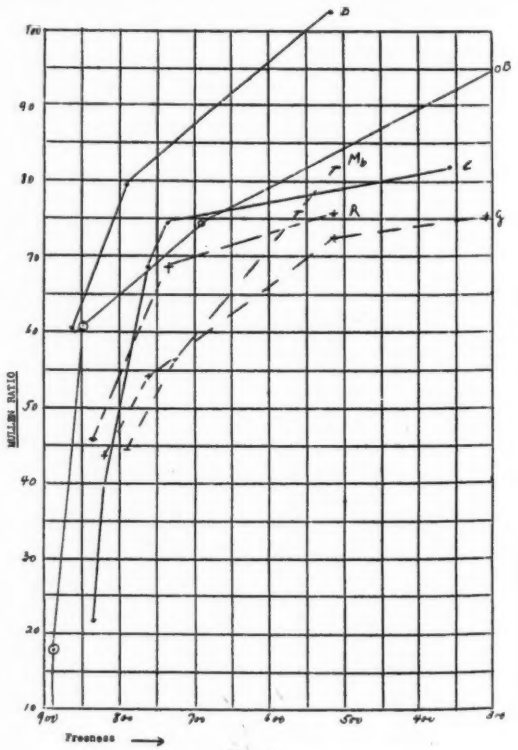


FIG. 2

freeness. Further, it is worthwhile to note that some tests are not spaced enough apart, so that two relatively close points are determined and then a larger interval is not covered by a test. The very high Mullen ratio of a very free pulp, in the data of laboratory "D" is noteworthy, as this must be caused by some peculiarity in the testing procedure.

For the later calculation of the "beater value," it was necessary to calculate the Mullen points directly in pounds per square inch and as these data might be of more interest to some of you than the Mullen ratio, they are presented in Table XVI. The data, as is to be expected, differ more than the Mullen ratio, as the basis weight used for the sheets varied considerably. Some laboratories used 44, 50, 54, 65, 75 and 92 pounds (25 x 40-500). The main value of Table XVI is that it proves, again, what has often been said before, that the basis weight of test sheets should be the same in all laboratories. Then, such tests as ours today would be much simpler to evaluate, and some of the discrepancies would be considerably reduced.

The Tear Ratio

In Table XVII the tear ratio, which is the tearing force in grams divided by the basis weight 25 x 40-500, is calculated. The tests for laboratories "C," "Y," "B," "D," "Mj" and "R" check fairly good. (See Fig. 3.) The data of "G" seems to be too low, which probably was caused by the beating conditions. This laboratory uses a much heavier charge of stones than usual, and a high speed (100 r.p.m., instead of the usual 56 to 60 r.p.m.). These two conditions cause, as one might assume, a shortening of the fibers and decrease of their felting properties, which, again, would be

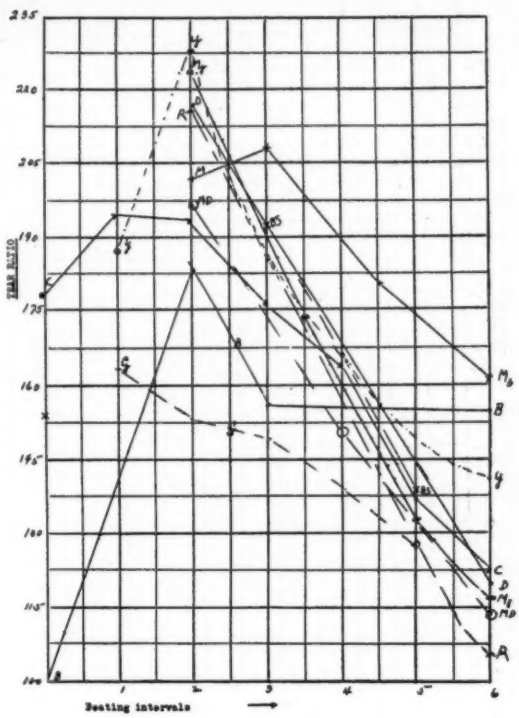


FIG. 3

TABLE XV.—B. MULLEN RATIO IN RELATION TO FREENESS

All freeness data calculated to Schopper Riegler Beating—Degrees using 2 grams bone dry for the determination.

Lab.	BS	C	N	Y	A	B	D	G	M	M	MD	R	S
Freeness	Beating Degree								Ball Mill	Jordan	Jordan		
860	14	12.55	....	....	....	....	....	60.1	....	....	....	....	18.55
837	16.25	....	21.4	....	....	....	....	....	....	....	....	45.75	....
820	18	....	40	....	....	....	....	....	43.6	....	....	....	....
790	21	....	....	....	....	....	....	79.5	....	44.25	45.1	61.1	....
760	24	....	68.2	....	....	....	....	....	....	....	....	....	....
735	26-27	....	74.75	....	....	....	....	....	54	....	55.3	81.1	....
725	28½	....	....	....	....	68	....	....	....	56.25	....	68.25	68.25	61.50
615	38-39.5	65.9	78.75	....	....	....	....	95.5	....	....	....	....	....	....
560	44	....	....	....	....	....	....	....	....	76.0	66.3	92.75	....	....
515	48/49	....	....	....	....	....	....	104	....	81.75	69.15	94.0	....	....
490	51	....	....	....	....	....	....	....	72.1	....	....	....	75.1	....
440	56	95.55	70	....	....	....	....	....	....	....	....	....	....	....
360	64	....	81.75	....	....	....	....	....	....	....	....	....	....	....
310	69	....	....	....	....	....	....	....	75.0	....	....	....	....	....
180	82	....	....	....	....	....	....	....	65.5	....	....	....	....	....
120	88	....	....	....	....	....	....	....	57.5	....	....	....	....	....

TABLE XVI.—MULLEN POINTS DIRECT IN RELATION TO BEATING TIME

Lab. BS Beating Time	C		N		Y		A[1]		B[2]		D		G[1]		M Ball Mill		M Jordan		MD Jordan		R		S	
M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	Lbs.	Test	Lbs.	Test	M.	Test	M.	Test
0	6	...	....	0	7.1	0	10	...	....	0	11.45	...	...	...	...	...	...	....	....	....	...	...	....	0	7.8
0	16	...	....	...	....	10	17	...	....	...	....	...	...	60	23	...	...	....	....	....	...	30	20	...	....
...	....	...	....	...	....	20	29.4	...	....	35	51	22.5	44.5	120	28.5	22.5	20.5	45	20.7	45	52.5	...	....	...	....
165	43	...	....	15	39.7	30	35.5	50	62	60	62.7	45	58.7	180	38	45	25.5	75	24.3	75	58.2	75	30	...	....
...	....	...	....	30	50.7	40	40.5	...	....	75	70	67.5	67.3	240	39.5	67.5	35.4	167.5	28.42	167.5	70.8	120	33	...	....
330	62	...	....	50	57.2	50	42.75	...	....	100	79.6	90	71.2	300	34.5	90	36.7	175	30.9	175	72.7	...	....	...	....
...	....	...	....	...	....	60	42	...	....	...	....	...	...	360	30.6	...	...	....	....	....	...	...	....	...	....

[1] Basis weight was assumed to have been always 50 lbs.
[2] Basis weight was assumed to have been always 70 lbs.

TABLE XVII.—TEAR RATIO IN RELATION TO BEATING TIME: CALCULATED AS TEAR IN GRMS. DIVIDED BY BASIS WEIGHT 25 x 40—500

Lab. BS Beating Time	C		N		Y[1]		A		B[2]		D		G[1]		M Ball Mill		M Jordan		MD Jordan		R		S	
M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	Lbs.	Test	Lbs.	Test	M.	Test	M.	Test
0	154	0	177.5	No		0	69.5	...	....	0	99	...	....	...	....	...	...	....	....	....	....	..	....	0	184.5
...	....	15	197	Tear		10	187	...	....	...	....	...	....	60	163.5	...	...	....	....	....	....	..	....	..	....
165	192.5	30	194	Tests		20	228	...	....	35	183.5	22.5	217	120	153.5	22.5	202	45	223	45	....	30	216	..	....
...	....	45	176	Reported		30	185.5	50	229	...	....	45	185	180	149	45	208	75	170.5	75	197.5	..	....	?	177.5
...	....	60	165			40	166	...	....	60	156	67.5	162	240	139	67.5	180	....	....	....	....	..	....	..	....
330	138.5	75	138			50	149.5	...	....	100	153	...	....	...	....	90	162	167.5	131.1	167.5	150.5	75	129	..	....
...	....	90	123			60	141	...	....	...	....	90	119.5	360	128	...	...	175	115.5	175	114	120	106.5	..	....

[1] Basis weight 70 lbs. assumed.
[2] Basis weight 50 lbs. assumed.

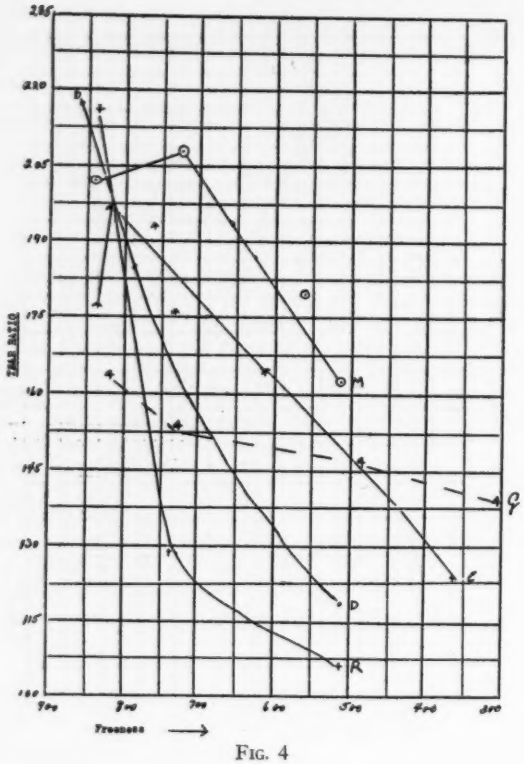


FIG. 4

expressed in lower tear. But, even if the data of the majority of laboratories agree to some extent, there still are too large discrepancies which probably might be reduced, if all laboratories would equalize their testing conditions more. Fig. 4 shows the relation between the tear ratio and freeness.

In Table XVIII, the tear in grams without the division by the basis weight is given. The same objections as to Table XVI—the Mullen points direct—are to be raised.

Fold

In Table XIX the folding strength, as tested with the Schopper, is reported as double folds, without relation to the basis weight. The basis weight for "BS" was 65 pounds, for "N" 64, for "A" 92, for "D" 74, for "M_b" 45, for "Mj" 45, and for "MD" 75 pounds. Even if one considers these different basis weights, the fold figures vary considerably especially between "D" and "M" ball mill.

TABLE XX
TENSILE STRENGTH REPORTED AS BREAKING LENGTH IN M: IN RELATION TO BEATING TIME

Lab. BS		N		D		M Ball Mill		M Jordan		S	
Beating Time	Test	M.	Test	M.	Test	M.	Test	Lbs.	Test	M.	Test
0	649	0	1380	...	....	....	....	....	....	0	1630
...	....	...	....	22.5	3250	22.5	2270	45	2590	...	....
165	4000	15	3715	45	4750	45	3455	75	3750	...	....
...	....	30	4715	67.5	5555	67.5	4220	167.5	4650	?	4715
330	5750	50	5615	90	6050	90	4760	175	4865	...	....

TABLE XXI
STRENGTH IN PER CENT AS OBSERVED WITH THE TENSILE STRENGTH: IN RELATION TO BEATING TIME.

Lab. D		M Ball Mill		M Jordan	
22.5	5.5%	22.5	2.47	45	2.70
45	4.88	45	3.27	75	2.50
67.5	5.25	67.5	3.82	167.5	3.13
90	3.88	90	4.05	175	3.13

The check between "M jordan" and "MD" on the higher beaten pulp is very good. The figure of 3030 in the "BS" column probably was caused by the use of the M.I.T. instrument. As we know, no relation between Schopper and M.I.T. folds could be worked out.

Tensile Tests and Stretch

In Table XX the tensile strength is given. If the data at the maximum strength are averaged, one gets 5408 meters. The deviations from this average are:

Lab.:	BS	N	D	M_b	M_j
	+6.32%	+3.8%	+11.85%	—12.0%	—10.0%

Table XXI shows the stretch figures, which were observed during the tensile test determination. They were reported only to give eventually a lead for the discussion of the cause of the variations in tensile strength and in other properties.

Table XVII includes the determinations of the "apparent specific gravity," which is the basis weight expressed in grams per square meter, divided by the thickness of the dry pulp sheets expressed in 1/1000 mm. The apparent specific gravity, it was hoped, might give one factor for correcting the tests of the different laboratories. The work by Doughty, of the Forest Products Laboratory, Madison Wis., has shown how important the solid fraction is, which factor is the apparent specific gravity in relation to the specific density for fiber substances (about 1.5). As this density is only an assumed one, we can just as well use the apparent specific gravity figure directly, as it was proposed in the new tentative TAPPI sheet-making method using the British sheet machine. Doughty reports tests he made where sheets of two samples of unbeaten pulp gave a breaking length of 3000 meters for pulp A and 2700 meters for pulp B, but the maximal bursting strength of the

TABLE XVIII.—TEAR DIRECT IN GRMS. IN RELATION TO BEATING TIME

Lab. BS		C		N	Y[2]		A		B[1]		D		G[2]		M Ball Mill		M Jordan		MD Jordan		R		S	
Beating Time																								
M.	Test	M.	Test	M. Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	Lbs.	Test	Lbs.	Test	M.	Test	M.	Test
0	59	...	....	No	0	42	...	....	0	85	...	...	...	...	...	....	....	....	....	...	...	....	0	77.5
...	....	...	....	Tear	10	113	...	....	...	....	...	...	...	60	86	....	....	....	....	...	30	95	...	....
...	....	...	....	Tests	20	137.5	50	208	35	155	22.5	161	120	81	22.5	93.55	45	102.5	45	249	...	....	...	....
165	125.5	...	....	Reported	30	112	...	....	60	141	45	137	180	78.5	45	94.5	75	75	75	142	75	57	...	75.5
...	....	...	....	...	40	100	...	....	...	....	67.5	114	240	73.5	67.5	84.1	167.5	56.4	167.5	116	120	47	...	....
330	90	...	....		50	90	...	....	75	131.5	90	82	300	62.5	90	72.6	175	52.6	175	88	...	....	...	....
...	....	...	....		60	85	...	....	100	128.8	...	...	360	67.5	...	....	....	....	....	....	...	....	...	....

[1] Basis weight 70 lbs. assumed.
[2] Basis weight 50 lbs. assumed.

TABLE XIX.—*DOUBLE FOLDS* REPORTED AS SUCH IN RELATION TO BEATING TIME

Lab. BS		N		A		D		M Ball Mill		M Jordan		MD Jordan	
Beating Time	Test	Mins.	Test	Mins.	Test	Mins.	Test	Mins.	Test	Lbs.	Test	Lbs.	Test
0	3	0	3.5	..	....	...	....	....	....	....	....	....	....
...	...	15	200	..	....	22.5	842	22.5	40	45	72	45	797
165	900	30	424	..	....	45	1146	45	314	75	224	75	654
...	...	..	....	..	1620	67.5	1685	67.5	680	167.5	992	167.5	957
330	3450	50	1991	..	....	90	2060	90	1029	175	1276	175	1377

beaten pulp indicated just the reverse, that pulp B was stronger than A. The solid fraction for sheets A was 0.29, for B 0.24, and after an application of these factors the corrected test for pulp A was 3000 meters and for B 3100 meters.

The application of the apparent specific gravity for our tests was not as successful as in Doughty's example, because our test sheets were not made in an identical manner, as were his, but were prepared under varying conditions. The drying of the sheets has much influence on the thickness, and the one-side glazed sheets from the British Sheet Machine, as used by laboratories "M" and "S", must give other apparent specific gravity values than the rough sheets from the other laboratories.

Another difficulty in applying these data is that, as Doughty points out, not a simple mathematical formula will be satisfactory. He gives an approximated equation which helps, but, as far as I can see, our data are not sufficient to use this equation. However, with more study and after some experimentation about the relations of one-side glazed sheets, for example, to rough sheets, the factor ot solid fraction will be of great value.

Work of Bergman

In the meanwhile, we might try to use some of the composite strength factors which were proposed by different investigators. In Tables XXIII and XXIV the bursting area, which is Mullen points, divided by basis weight in grams per square meter; and "tearing area," which is the tearing force in grams, divided by the basis weight in grams per square meter, are reported. Both calculations are necessary if one is to find the Bergman strength product, which is bursting area times tearing area. These two expressions are, naturally, similar to Mullen ratio, or tear ratio, but some prefer to express these tests on the metrical scale, as we do with other technical investigations.

In Table XXV this Bergman Strength Product is then calculated. The results are not so good as one would have expected from the data which Bergman had reported in his investigation. If we take the maximum figure for the different laboratories, we find 48.5, 54.7, 48.2, 35.4, 65.4, 35 and 39.8. It seems to me, that Bergman's direct multiplication of burst and tear amplifies errors in the tear test too much.

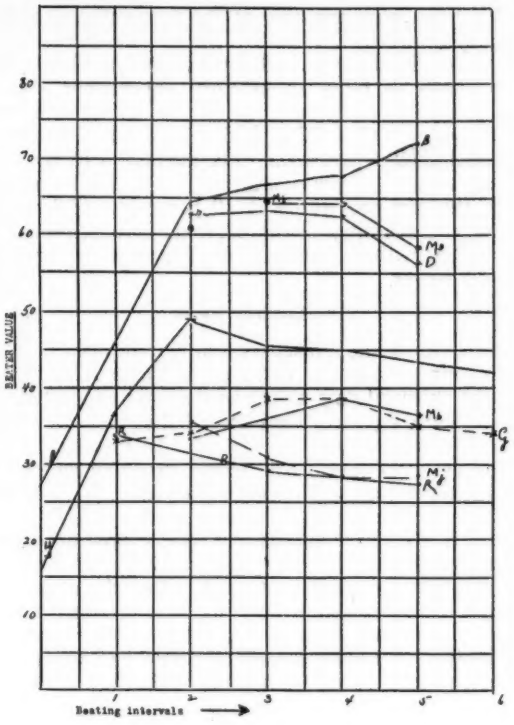


FIG. 5

In Table XXVI the "beater value," therefore, was calculated in the form as Moore and Willets used this term. The variations are still bad. See Fig. 5. Moore and Willets worked with tests where the basis weight was well standardized, and, therefore, they could use an expression which does not take into account the ratios. In the original Gephart beater value, this is done as Gephart calculates

TABLE XXII
APPARENT SPECIFIC GRAVITY OF TEST SHEETS IN RELATION TO BEATING TIME

Lab.	D	M		M		R		R		S		A		G	
		Ball Mill		Jordan											
Time	Test	M.	Test	Lbs.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test
22.5	.665	22.5	.652	45	.648	...	...	0	.54	...	...	60	.50	0	.609
45	.697	45	.688	75	.690	30	.63	..	..	50	.691	240	.60	15	.714
67.5	.775	67.5	.82	167.5	.731	75	.79	?	.65	..	....	....	..	30	.747
90	.839	90	.81	175	.76	120	.90	..	..	..	....	360	.65	50	.796

TABLE XXIII
BURSTING AREA ACC. TO BERGMAN IN RELATION TO BEATING TIME, CALCULATED AS MULLEN POINTS × 70.3, DIVIDED BY BASIS WEIGHT IN GRAMS/M².

Lab.	BS	C		N		Y		A		D		G		M		M		MD		R		S	
Beat. Time														Ball Mill		Jordan		Jordan					
M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	Lbs.	Test	Lbs.	Test	M.	Test	M.	Test
0	4.53	...	...	0	5.45	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	9.2
0	6.29x	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	30.0	22.8	...	...
...	...	...	...	15	30.7	...	...	...	...	22.5	29.5	...	...	22.5	22	45	22.4	45	31.1	75	34.1	?	30.4
165	33.4	...	...	30	41.75	...	...	50	33.8	45	39.7	...	...	45	27.9	75	27.4	75	40.5	120	37.6	...	...
...	...	...	...	..	...	...	...	...	...	67.5	47.65	...	...	67.5	37.7	167.5	32.9	167.5	45.9	...	...	...	...
330	48.5	...	...	50	46.5	...	...	...	...	90	53.15	...	...	90	40.6	175	34.4	90	47.1	...	...	...	...

x This figure was calculated, using the high basis weight.

TABLE XXIV
TEARING AREA ACC. TO BERGMAN IN RELATION TO BEATING TIME, CALCULATED AS TEARING RESISTANCE IN GRAMS DIVIDED BY BASIS WEIGHT IN GRAMS/M².

Lab.	BS	C		N		Y		A		D		G		M		M		MD		R		S	
Beat. Time														Ball Mill		Jordan		Jordan					
M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	Lbs.	Test	Lbs.	Test	M.	Test	M.	Test
0	63.5	...	...	Tear		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	131
0	107 x	...	...	Not		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	Reported		...	...	50	162	22.5	151.5	...	...	22.5	143.5	45	158.1	45	210	30	153.5	...	...
165	138.9	...	...			...	...	...	...	45	132	...	...	45	147.8	75	121	75	140	...	...	?	131
...	...	...	...			...	...	...	...	67.5	115	...	...	67.5	128	167.5	93.4	167.5	106.5	75	92.3	...	...
330	130	...	...			...	...	...	...	90	85.2	...	...	90	115	175	84	175	81	120	76	...	...

Mullen ratio, plus one-half of the tear ratio, and this divided by two.

In Table XXVIa you find these values calculated, and we come finally to more satisfactory expressions. We still have plenty of variations, but if we take the maximum figures, we get 82.4, 82.6, 86.5, 91.25, 76.25, 88.25, 73.3, 83.0, 78.3, 89.9, 76.9, 75.15. The average is 81.86. Of all the laboratories, 50 per cent are within ± 5 per cent of this figure, the rest are within ± 10 per cent. This result is relatively gratifying, as in previous strength studies of laboratories, without specification of methods, the variations were far larger.

Chemical Tests

Before we go into a discussion of certain influences in the sheet making, we might just look at Table XXVII, which gives the chemical data as far as they were reported. The alpha cellulose figures should check better than they do, but, again different methods were used. In viscosity it is the same thing. "D" and "Na" would probably agree better, but the temperature was different, and also some deviations from the standard procedure were made. "CD" has also modified the TAPPI standard. This is most unfortunate. In the viscosity test we have a new testing method which was carefully worked out and adopted as standard. Strength testing is much older, and the standard methods, as far as we have them at all, were written much later, after most of the mills cooperating here had adopted their mill procedure. It is much more difficult now to get a majority of laboratories to change over. But, in viscosity testing and any new testing method, we should endeavor to conform to the standards which we ourselves have set.

Pulp Character Statements

In sending out our test-pulp, we asked that the pulp character be described as if we were writing a specification. This was not done, but we received some replies of interest. Laboratory "C" interprets the test, that in comparison to their reference pulp, "the submitted pulp has much more developed strength, is longer fibered, but not as bright." Laboratory "Y" writes, "from the relatively few bleached pulps we have tested, we would say that this (the submitted pulp) was a bleached kraft, judging from the high tear and relatively low Mullen and would be a good pulp for use where strength was essential. On the assumption that the pulp is bleached kraft, the specifications for purchase of the same quality would be simple. On the other hand, if the pulp is bleached sulphite, from our limited tests, we would not know how to instruct the purchaser, or where to look for pulp of these specifications."

Laboratory "A" concludes: "On beating, this pulp will develop a good tear coupled with a fairly good Mullen and fold. It is a free pulp, as it decreases in freeness rather slowly on beating. It is very clean, but its color is low for high grade papers."

Laboratory "B" writes, "we could classify this pulp as a comparatively easy hydrating pulp, possessing low strength and high tear characteristics."

Laboratory "G" concludes: "In interpreting these results we could conclude that this pulp is rather soft, beating readily and reaching its maximum bursting strength early in the beating process. The tearing strength is only fair and drops off too early in the beating process to allow this pulp to be used in a paper where high tearing strength is essential."

Laboratory "R" expresses its opinion in figures, by comparing it with a standard. "The beating (probably the time required for reaching a certain freeness) is 99 per cent of the standard. The "pop" (or Mullen strength) is 98 per cent of the standard, and the tear is 104 per cent of the standard."

Laboratory "S" reports that "the pulp would appear to be suitable for fine book, or similar purposes. A good, clean, medium strong pulp."

TABLE XXVII
CHEMICAL CONSTANTS

Lab.	D	G	Na	CD	BS
Alpha Cellulose...	84.34	83.70	85.3	84.17	83.5%
Viscosity	22.5 at 20° C.	....	19.46 at 25° C.	20.0	.... Centipoises
Copper Number...	...	2.43	....	...	2.65

TABLE XXV
BERGMAN STRENGTH PRODUCT IN RELATION TO BEATING TIME, CALCULATED AS BURSTING AREA × TEARING AREA.

Lab. BS Beat. Time		C		N		Y		A		D		G		M Ball Mill		M Jordan		MD Jordan		R		S	
M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	Lbs.	Test	Lbs.	Test	M.	Test	M.	Test
...	...	...	...	Tear		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	12
...	...	...	...	Not		...	...	50	54.7	22.5	44.7	...	...	22.5	31.5	45	35.4	45	65.4	30	35	...	...
165	46.4	...	...	Reported		...	...	...	...	45	52.3	...	...	45	41.2	75	33.1	75	56.7	...	...	...	...
...	...	...	...			...	...	...	...	67.9	54.7	...	...	67.5	48.2	167.5	30.7	167.5	48.9	75	31.5	?	39.8
330	48.5	...	...			...	...	...	...	90	45.3	...	...	90	46.6	175	28.8	175	38.1	120	28.6	...	...

TABLE XXVI

"BEATER VALUE" ACC. TO GEPHART IN RELATION TO BEATING TIME, BUT CALCULATED AS MULLEN POINTS PLUS ½ TEARING FORCE IN GRAMS.

Lab. BS Beating Time		C		N		Y		A		D		G		M Ball Mill		M Jordan		MD Jordan		R		S		B	
M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	Lbs.	Test	Lbs.	Test	M.	Test	M.	Test	M.	Test
...	....	...	....	Tear		0	15.5	...	....	...	....	...	...	...	....	...	....	...	...	...	....	0	24.28	0	26.98
...	....	...	....	Not		10	36.75	...	....	...	....	60	33	...	....	...	....	...	...	...	....	...	...	...	...
165	52.8	...	....	Reported		20	49.08	50	83	22.5	62.5	120	34.5	22.5	33.63	45	35.93	45	...	30	33.75	?	31.88	35	64.25
...	....	...	....			30	45.75	...	....	45	63.6	180	38.6	45	36.38	75	30.9	75	64.6	...	....	...	....	60	66.60
...	....	...	....			40	45.25	...	....	67.5	62.15	240	38.12	67.5	38.72	167.5	28.31	167.5	64.4	75	29.25	...	....	75	67.88
330	53.5	...	....			50	43.63	...	....	90	56.1	300	35.38	90	36.50	175	28.60	175	58.35	120	27.75	...	....	100	72.00
...	....	...	....			60	42.25	...	....	...	....	360	34.13	...	....	...	....	...	...	...	....	...	....	...	....

TABLE XXVI(a)
BEATER VALUE ACCORDING TO GEPHART, CALCULATED AS MULLEN RATIO PLUS ½ TEAR RATIO

Lab. BS Beating Time		C		N		Y		A		D		G		M Ball Mill		M Jordan		MD Jordan		R		S		B	
M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	M.	Test	Lbs.	Test	Lbs.	Test	M.	Test	M.	Test	M.	Test
0	44.75	0	55.01	...	....	10	25.67	...	....	...	....	...	...	...	....	...	....	...	....	...	....	0	55.4	0	56.3
...	....	15	69.25	...	....	20	71.25	...	....	...	....	60	62.68	22.5	72.75	...	....	...	....	...	....	...	....	...	....
165	81.07	30	82.6	...	....	30	86.5	50	91.25	22.5	84.3	120	65.25	45	80.13	45	78.3	75	89.9	30	76.9	?	75.15	35	76.13
...	....	45	81.37	...	....	40	75.1	...	....	45	86.0	180	73.3	67.5	83.0	75	70.25	167.5	84.0	...	....	...	....	60	76.25
330	82.4	60	80.63	...	....	50	72.42	...	....	67.5	88.25	240	72.25	90	81.38	167.5	65.9	175	75.5	75	66.38	...	....	...	....
...	....	90	71.62	...	....	60	70.05	...	....	90	81.88	360	60.75	...	....	175	63.42	...	...	120	64.17	...	....	...	....

One laboratory, which had sent no strength tests, wrote as follows: "Such tests as we find necessary to employ to guide us in its use, are: pH = 5.2, color A-1, freeness 12 degrees S.-R. after 30 minutes beating. The beating is done in a pebble mill, using 10 grams air-dry pulp, 500 grams boiling water and 2 grams soda ash. After 30 minutes of beating, the lid is removed and 4 grams alum added and the contents stirred. Then the freeness is taken on the Schopper tester and shall not be less than 15 degrees. The pH for unbleached sulphite shall not be under 5.5 for bleached sulphite not under 5.0. Unbleached sulphite must return to original shade after being soaked 1 hour in water, at pH 7.6, then dried, then soaked 1 hour at pH 4.3, and redried. The bleached pulp submitted is satisfactory for paper specialties as far as pH and color is concerned, but unsatisfactory because of too low freeness."

You have seen that the opinions vary considerably. What one laboratory calls high tear the other terms low tear, etc. This indicates again as we found out before that at the present state of pulp testing one must take at least a composite strength figure like the beater value. Undoubtedly with more work done in this direction we will be able to get expressions which include the beating characteristics or freeness too, where we take account of the apparent specific gravity and other necessary properties.

Causes of Discrepancies

Now to the discussion of the cause of some discrepancies in the reported tests. Only two laboratories reported on the important preparations of the pulp sample. In the laboratory "N" the pulp was stirred for 15 minutes at 4.5 per cent consistency with a Lightning stirrer and in the laboratory "D" the pulp was agitated at 1.5 per cent bone-dry consistency for 15 minutes with a ¼ h.p. Lightning stirrer which rotates with 1725 r.p.m. In the laboratory "M" for the jordaned samples and in the laboratory "S" probably the instructions of the tentative TAPPI method were followed that the pulp should be stirred at 1.2 per cent consistency for 25 minutes with a special disintegrator running at 3000 r.p.m. In the Interim report of the British Pulp Evaluation Committee in chapter 8 it is proven quite clearly that the conditions of this stirring influence the test results very much, and it will be necessary to improve the different mill procedures in this report.

In the pulp processing with beaters probably the older Valley Iron Works beater should be rebuilt to include all the new features as anti-friction bearing. The experience which Bergman has had is worth mentioning. Through accurate tests they found out that in a Valley beater of the older construction in time the bearings wore out unevenly, thus causing an uneven distribution of the pressure and an uneven beating. After insertion of new bearings and particularly careful grinding of knives and bedplate the beater worked satisfactorily.

From Table XII you will have seen that the conditions of the amount of pulp furnished, its consistency, rollspeed and weight on the bedplate lever were quite different. This together with the other variables of sheet machine, sheet pressing and drying offers sufficient explanation why the tests of the laboratories B, S, C, Y and N differ. The ball mills were probably run with similar variations. Especially far off the standard is the procedure of laboratory G which used a speed of 100 r.p.m. against the standard speed of 56 to 60 r.p.m. Also its weight of stones with 6800 grams is much higher than the weight of 4200 grams which is usually used. Furthermore we should not forget the investigations of Peterson, who showed that a specification of the weight of the stones or their volume or their number alone is not enough. The shape and hardness of the balls can influence the strength results considerably.

The sheet machines used were: The Bureau of Standards, Williams, Valley, Appleton and British machines. From the investigations made in Madison, where 4 sheet machines were compared and from one comparison made in the Research Institute in Montreal, I understand that one can get good tests with most of them, especially if on the machines of square sheet size only the round center of the sheet is used for testing. But variables like the consistency during sheetmaking and the drainage rate are important. In comparing the test of laboratory D and M which were both made of stock from the same ball mill beating we were wondering why the tests of D are higher in Mullen, fold and breaking length than the tests of M. In laboratory D the pulp is stirred again after the beating for 15 minutes in the Lightning stirrer at 1.5 per cent consistency oven-dry. The pulp thus prepared was sent to laboratory M. For the sheetmaking laboratory D uses the Williams sheet machine. The total volume of water and stock is 4200 cc. and the stock consistency is .936 per cent oven-dry. In deviation from the standard procedure, pump suction is used with a vacuum of 16 to 18 inches. It was expected that this suction might have had something to do with the observed discrepancies between D and M.

Sheets were therefore made on a sample of some other pulp using in one case pump suction and in another only the usual drainage.

Beating time	22.5 Minutes		67.5 Minutes	
	With Suction	Without Suction	With Suction	Without Suction
Mullen ratio $\frac{25 \times 40}{500}$	49.5	47.8	60.5	67.0
Tear ratio $\frac{25 \times 40}{500}$	175	176.8	118	144.5
Fold direct	430	896	1591	696
Breaking length meters	3850	3850	4095	4830
Stretch	4.0%	4.0%	3.75%	5.0%
Bulk in points on the dry sheet	6.0 pts.	6.0 pts.	4.5 pts.	4.5 pts.
Basis weight $\frac{25 \times 40}{500}$	75.5 lbs.	77.0 lbs.	75.5 lbs.	73.5 lbs.

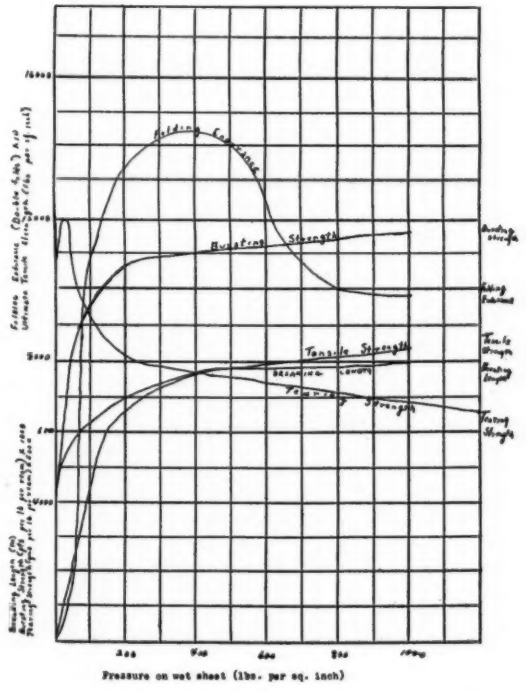


FIG. 6

The tests show that there are some variations but not such which would explain the large difference especially in breaking length. This observation is checked by others who did not find much influence of the drainage rate as long as it was not too slow. Further the moisture content of the sheet using suction and no suction and the influence of couching with a 21 pounds heavy couch roll, similar to the one used on the Valley Iron Works sheet machine was determined as well as the moisture content after pressing.

Beating Time	22.5 Minutes		67.5 Minutes	
Freeness Schopper Riegler	790		640	
	With Suction	Without Suction	With Suction	Without Suction
Moisture content after drainage	91.3%	93.7%	90.5%	93.1%
Moisture content after couching	88.7%	.....	86.2%	89.1%
Moisture content after pressing	.....	63.7%	66.7%	65.7%

In the case of "No pump suction" we have a higher moisture content entering the press but in pressing the moisture content is reduced as much as for sheets made with pump suction.

The influence of pressing was studied next. It is well known from the investigations of Cameron and others that variations in pressure will influence strength considerably. Doughty has shown this very clearly and you will find in Fig. 6 a particularly interesting picture. It shows how the strength is remarkably increased by a pressure up to about 300 pounds per square inch, particularly in tear and fold.

In the laboratory D normally the sheets are pressed for 3 minutes between felts at 180 pounds per square inch, but in the laboratory M the sheets are pressed between standard sized blotters and polished plates once for 5 minutes at 50 pounds, then after a change of blotters, for 2 minutes again at 50 pounds. In the following test on another pulp the procedure of laboratory M was changed in this respect that the sheets were pressed not with the polished plates but with blotters only.

Beating Time	22.5 Minutes		67.5 Minutes	
Freeness	850		730	
Pressure	180 lbs.	50 lbs.	180 lbs.	50 lbs.
Basis weight $\frac{25 \times 40}{500}$	82.5	83.4	83.3	81.5
Mullen ratio $\frac{25 \times 40}{500}$	60.5	54.3	87.7	82.2
Tear ratio $\frac{25 \times 40}{500}$	182	184	155	156
Fold	218	146	934	860
Breaking length, meters	4270	4070	5900	5900
Stretch per cent	2.88	3.38	3.75	4.00
Bulk in pts. after pressing wet	10.5	11.0	10.5	11.0
Bulk in pts. sheet dry	7.0	6.75	6.25	5.75

The Mullen ratio and fold for the 50 pounds pressure are lower, tear is equal, breaking length is irregular. Quite interesting are the bulk figures which after pressing are higher for the 50 pounds pressure, but after drying the reverse is the case. The surface of the sheets pressed at 50 pounds was much smoother than the one pressed between felts at higher pressure. This will be of importance for the evaluation of apparent specific gravity. The question was raised, if the deviation from the British procedure, to press without the polished plates, influenced the results. Another investigation was made, where in one case the sheets were pressed between felts at 180 pounds per square inch and in the other were pressed according to the British procedure using blotters and the polished plates.

Beating Time	45 Min.		90 Min.	
Freeness S. R.	780	780	610	610
Pressure, lbs./sq. in.	180	50	180	50
Pressure time, min.	3	5 + 2	3	5 + 2
Pressure, medium	Felts	Blotters	Felts	Blotters
Basis Wght., 25x40/500	72.55	73.5	70.85	71.95
Mullen ratio	75.5	76.55	94.5	95.2
Tear ratio	151.5	155	134	133.5
Breaking Length	5050	4820	6250	6635
Strength, per cent	4.37	4.0	4.75	4.75
Fold, double folds	964	630	1247	1261
Bulk on dry sheet	6.0	4.5	5.0	4.25

Other influences might enter with the drying of the sheets and the testing. The importance of relative humidity is well known. The laboratories B, S, M and probably S test at 65 per cent—D had 50 per cent, B uses 45 per cent, Y tests at 40 per cent and N, A, R, C and G did not report. It is not sufficiently appreciated that the pulp test sheets have different strength in both directions. One should mark the line from back to front of the sheet machine in a suitable way, for example with an arrow written on the couch felt with a pencil and then take the other strips perpendicular to the first. Tear strips test quite different in both directions, also tensile test strips.

All these variables and many more which probably will be brought out in the discussion caused the variations which we have observed. Quite a few of them can be adjusted without any radical or costly change in the present mill methods. That with such adjustment we will reach our goal where we will evaluate a pulp in the same way was proven in another study of an Alpha pulp between the laboratories D and B.

In conclusion I want to plead for a "new deal" in strength testing. Let us be optimistic and active in improving the present methods. The committees of TAPPI should be encouraged to start more research on the problems which Doughty has so successfully investigated, and to stimulate other institutions to help in this field. We ourselves should contribute as much as possible to the investigations of the the pulp specification committee and any other work undertaken by the pulp testing committee. Pessimism and inactivity can only delay the introduction of pulp specifications; it most certainly will come some day just as was the case in many other industries.

TAPPI FALL PROGRAM

(Continued from page 32)

of Electrolytes into Wood, by L. T. Thomason and D. W. McCready (by title).

12. The Opacifying of Paper by Means of Titanium Pigments, by W. R. Willets (by title).
13. A New Pulp Refiner, by Anton Haug (by title).

(Papers to be read by title will be discussed if there is time. All the authors expect to be present and will be glad to discuss their papers with anyone interested).

1:00 P.M. Joint Luncheon.

2:00-5:00 P.M. Mill Visits or Golf.

Price Bros. Reorganization Plans

MONTREAL, Que., September 11, 1933—At the close of an all-day sitting on Friday last the Bondholders Committee of Price Bros. & Co., Ltd., failed to complete their discussion or reach a decision with respect to the two plans that have been submitted for the reorganization of the company. The discussions are understood to be continuing.

Hermann Takes Over Unkle Screen

The Hermann Manufacturing Company, of Lancaster, Ohio, has taken over the manufacture and sale of the Unkle Screen and has reduced the price on both sizes.

The Unkle Screen is a positive means of removing fine dirt, rubber bands, paper clips, buttons, etc., from old papers. Capacity of the standard screen is 100 tons in 24 hours.

Obituary

John Atkins

John Atkins, esteemed vice president and treasurer of the Perkins-Goodwin Company, of 551 Fifth Avenue, New York, died of a heart attack August 31 in his office.

Mr. Atkins had been connected with the company for the past twenty-seven years, and prior thereto was manager of the New York office of John Dickinson & Co., Ltd., of London, England. He was sixty-two years of age, was born in London, England, and came to this country in 1898. He was a Mason and a Shriner, and a member of the Westport Country Club, and his home was at 40 France street, Norwalk, Conn.

Surviving are his widow, Marian; two sons, Clarence H. and John T. N., and a daughter, Mrs. Lester H. Denson.

Mr. Atkins endeared himself to all who knew him. He was a gentleman of the old school, with high ideals and principles, and he will be very much missed by his many friends in the paper trade.

James J. McEwan

[FROM OUR REGULAR CORRESPONDENT]

FORT EDWARD, N. Y., September 9, 1933—James J. McEwen, prominent in paper mill circles in this section, died this week at his home here following a brief illness. He was widely known amongst paper mill men, having served for eighteen years as superintendent of the local branch of the International Paper Company and for twenty-two years in a similar capacity with the Union Bag and Paper Company, at Hudson Falls. He was born in Prince Edward Island, Canada. He served as Mayor of this village for a brief time and also occupied other prominent municipal posts. He was also identified with a number of fraternal organizations. The survivors include his wife, three sons, and three sisters.

Cyrus E. Frey

ELKHART, Ind., September 5, 1933—Cyrus E. Frey, aged 69, died at his home, 1035 East Jackson Boulevard, Sunday, September 3. Mr. Frey had been in a critical condition for more than a week before his death. For several years his strength had been declining, due to heart complications.

Coming to Elkhart in 1904 to embark in the manufacture of bristol board and similar products, Mr. Frey attained a place among the community's leading manufacturers.

Surviving Mr. Frey are his widow, Winifred Smith Frey, to whom he was married in 1895 at Middletown, Ohio; a son, Smith B. Frey, of Elkhart; a daughter, Mrs. A. G. (Margaret) Earnshaw, of Mansfield, Ohio; three grandchildren and a brother. Mr. Frey was the son of Mr. and Mrs. Charles Frey and was born July 5, 1864, near the town of Napanee, Ontario.

At the age of 14, he became an apprentice in the paper making trade at Napanee, and he had a wide and varied experience in that trade before he came to Elkhart from Indianapolis in 1904 and bought at bankrupt sale the plant of the Consolidated Paper and Bag Company, a Walter Brown concern that was on the present site of the Illinois Carton and Label Company plant.

He operated this property as the Elkhart Bristol Board and Paper Company the succeeding twelve years, always successfully, and, during the early stages of the World War and up to the time of its sale, most profitably. In 1916 he sold the plant to the Mengel Box Company of Louisville, Ky., and he was comparatively inactive for several years, until 1919, when he went to the Lincoln Paper Mills Company in an advisory capacity, eventually becoming financially interested in it.

He remained with the Lincoln company until he sold his interests there in 1928, and two years later, at receiver's sale, he purchased most of the machinery for resale to other mills. Since retiring from active work in the paper trade, Mr. Frey had devoted his attention chiefly to his local real estate investments which were of an extensive character.

He was a member of Kane Lodge, Concord Chapter and Elkhart Council of the Masonic order, and of the Elkhart Chamber of Commerce. He served on the Elkhart county council two years, and was a member of the Elkhart board of public works thirteen years ago. At one time he was candidate on the democratic ticket for the office of county commissioner.

H. Dwight Bradburn

HARTFORD, Conn., September 5, 1933—H. Dwight Bradburn, former well known resident and paper manufacturer of Holyoke, died in his home at 726 Prospect Avenue, Hartford, Sunday evening. He was 84 years old. Mr. Bradburn, who in his early years worked for a long period in Holyoke paper mills, was at one time superintendent of the Beebe & Holbrook mill and later became one of the founders of the Nonotuck Paper Company. He retired from active business in 1900 when his mill was sold to the American Writing Paper Company.

Mr. Bradburn was born in Stockbridge March 5, 1849, the son of Henry J. and Lavinia (Jones) Bradburn. He entered the paper making field as a young man and in 1879 became superintendent of the Beebe & Holbrook Paper Company in Holyoke. The Nonotuck Paper Company was organized in 1880 with Mr. Bradburn as one of the organizers and its first general manager and superintendent. He was later elected its agent and retained that office until his retirement in 1900, then the Nonotuck company was merged in the A. W. P.

He then moved to Hartford and had made his residence there since that time. Mr. Bradburn was a 32d degree Mason and also a member of the Boston chapter of the Sons of the American Revolution.

He leaves, besides his widow, Margaret E. (Deveney) Bradburn, three children, George W. Bradburn of Providence, R.I.; Mrs. W. A. Schick of Brookline and Dr. T. Marion MacCormack, and two grandchildren, Dwight Bradburn MacCormack and George W. Schick.

Andrew E. Gillis

Andrew E. Gillis, president of the A. E. Gillis Paper Company of Hackensack, N. J., died in the Hackensack Hospital last week after an operation. He was 41 years old.

Mr. Gillis was a native of New York City. He founded the paper business in Hackensack twelve years ago, starting in an abandoned barn. He leaves his father, Peter J. McGillis of East Moriches; two brothers, Harry G. and John Gillis, and two sisters.

William S. Palmer

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., September 1, 1933—William S. Palmer, aged 68, of 5304 Knox street, Germantown, died suddenly yesterday on the third floor of his factory, the Palmer Paper Box Company, 40 East Wistar street. The Palmer factory has been idle for a year. Surviving Mr. Palmer is his widow, Mary B. C. Palmer.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING SEPTEMBER 9, 1933

CIGARETTE PAPER

Champagne Paper Corp., Indep. Hall, St. Nazaire, 202 cs.; American Tobacco Co., Indep. Hall, Bordeaux, 800 cs.; American Tobacco Co., Waukegan, Havre, 100 cs.; American Tobacco Co., Lafayette, Havre, 150 cs.; Standard Products Corp., Lafayette, Havre, 78 cs.

WALL PAPER

F. J. Emmerich, Port Darwin, Liverpool, 1 ble.; M. J. Carney, Olympic, Southampton, 4 cs.; ———, Manhattan, Havre, 8 cs.; R. F. Downing & Co., A. Ballin, Hamburg, 1 ble.; Hudson F'd'g Co., Berengaria, Southampton, 1 cs.

NEWS PRINT

Jay Madden Corp., Stuttgart, Bremen, 136 rolls; Jay Madden Corp., Scanpenn, Kotka, 744 rolls; Lunham & Reeve, Inc., Scanpenn, Kotka, 302 rolls; Gilman Paper Co., Scanpenn, Kotka, 142 rolls; ———, Malaren, Wiborg, 175 rolls; Jay Madden Corp., Manhattan, Hamburg, 134 rolls; H. G. Craig, Donnacona I, Montreal, 570 rolls; Star Co., Helle, Quebec, 1122 rolls; Baldwin Paper Co., A. Ballin, Hamburg, 110 rolls; ———, A. Ballin, Hamburg, 97 rolls; Parsons & Whittemore, Inc., A. Ballin, Hamburg, 165 rolls; Perkins Goodwin & Co., A. Ballin, Hamburg, 320 rolls.

PRINTING PAPER

Winsor Newton, Inc., Amer. Merchant, London, 4 cs.; F. C. Strype, Statendam, Rotterdam, 19 cs.; Steiner Paper Corp., Pennland, Antwerp, 13 cs.; P. C. Zuhlke, Pennland, Antwerp, 2 cs.; International F'd'g Co., Pennland, Antwerp, 9cs.; Fuchs & Lang Manfg. Co., Manhattan, Hamburg, 4 cs.

WRAPPING PAPER

Van Oppen & Co., Exeter, Genoa, 25 cs.

FILTER PAPER

H. Reeve Angel & Co. Inc., Amer. Merchant, London, 13 cs.; H. Reeve Angel & Co. Inc., Olympic, Southampton, 1 cs.; American Express Co., Exeter, Marseilles, 2 cs.

FILTER COMPOUND

Atlantic F'd'g Co., Stuttgart, Bremen, 110 bls.

FILTER MATERIAL

Gerhard & Hey, Statendam, Rotterdam, 38 crates.

DRAWING PAPER

Patent Reproduction Co., Berengaria, Southampton, 1 cs.

METAL COATED PAPER

K. Pauli Co., Stuttgart, Bremen, 33 cs.; Globe Shipping Co., A. Ballin, Hamburg, 34 cs.

SURFACE COATED PAPER

Chas. Happel, Manhattan, Hamburg, 46 cs.; Chas. Happel, A. Ballin, Hamburg, 18 cs.; Guaranty Trust Co., A. Ballin, Hamburg, 5 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Port Darwin, Liverpool, 7 cs. (duplex).

DECALCOMANIAS

Sellers Transportation Co., A. Ballin, Hamburg, 2 cs.; Sellers Transportation Co., Columbus, Bremen, 10 cs.; Sellers Transportation Co., Europa, Bremen, 2 cs.; Phoenix Shipping Co., Europa, Bremen, 1 cs.

TRANSFER PAPER

Rohner Gehrig & Co., Columbus, Bremen, 3 cs.

TISSUE PAPER

B. F. Drakenfeld & Co., Port Darwin, Liverpool, 8 cs.; F. C. Strype, Port Darwin, Liverpool, 2 cs.; Jay Madden Corp., Scanpenn, Helsingfors, 36 bbls., 1 cs.

STEREOTYPING PAPER

B. F. Drakenfeld & Co., Port Darwin, Liverpool, 4 cs.

STENCIL PAPER

American Indicator Paper Co., Wales Maru, Kobe, 2 cs.

WRITING PAPER

Globe Shipping Co., Berengaria, Southampton, 2 cs.

STRAW BOARD

Cleveland Container Co., Statendam, Rotterdam, 4 rolls; A. B. Massa Corp., Statendam, Rotterdam, 1400 pkgs.; Famous Paper Box Co., Statendam, Rotterdam, 3600 pkgs.; Belmont Paper Box Co., Black Gull, Rotterdam, 1000 pkgs.

CARD BOARD

Rohner Gehrig & Co., Ile de France, Havre, 7 cs.; Gevaert Co. of America, Pennland, Antwerp, 2 cs.

PAPER BOARD

International F'd'g. Co., Pennland, Antwerp, 4 cs.

MISCELLANEOUS PAPER

Keller Dorian Paper Co., Ile de France, Havre, 2 cs.; Steiner Paper Corp., Statendam, Rotterdam, 27 cs.; Corn Exchange Bank Trust Co., Wales Maru, Kobe, 35 cs.; Keuffel & Esser Co., Manhattan, Hamburg, 2 cs.; E. Fougera & Co., Lafayette, Havre, 51 cs.

RAGS, BAGGINGS, ETC.

Chase National Bank, Isarco, Genoa, 88 bls. rags; Chase National Bank, Isarco Genoa, 42 bls. felt waste; ———, L. A. Christensen, Barcelona, 350 bls. rags; Chemical Bank Trust Co., L. A. Christensen, Barcelona, 577 bls. rags; Bank of N. Y. Trust Co., L. A. Christensen, Barcelona, 244 bls. rags; Continental Bank Trust Co., L. A. Christensen, Barcelona, 68 bls. bagging; ———, L. A. Christensen, Barcelona, 30 bls. tares; Keene & Arkus, L. A. Christensen, Alicante, 165 bls. rags; L. Marcovitz, Amer. Merchant, London, 33 bls. rags; Bank of N. Y. Trust Co., Stuttgart, Bremen, 43 bls. tares; J. J. Ryan Sons, Inc., Statendam, Rotterdam, 156 bls. cotton waste; J. Cohen Sons, Inc., Statendam, Rotterdam, 18 bls. rags; Darmstadt Scott & Courtney, Statendam, Rotterdam, 107 bls. bagging; E. Butterworth & Co. Inc., Black Gull, Rotterdam, 117 bls. burlap; G. W. Millar & Co., Black Gull, Rotterdam, 68 bls. cottons; Banco di Napoli Trust Co., Black Gull, Rotterdam, 43 bls. rags; E. Mayer, Black Gull, Rotterdam, 255 bls. rags; E. J. Keller Co. Inc., Indep. Hall, ———, 540 bls. rags; Keene & Arkus, Indep. Hall, St. Nazaire, 67 bls. rags; J. Flannery, Waukegan, Havre, 41 bls. rags; S. Birkenstein & Son, Motomar, Barcelona, 247 bls. rags; Philadelphia National Bank, Motomar, Barcelona, 234 bls. rags; Keene & Arkus, Motomar, Barcelona, 597 bls. rags; E. J. Keller Co. Inc., Motomar, ———, 1043 bls. rags; Keene & Arkus, Motomar, Valencia, 331 bls. rags; Bank of N. Y. Trust Co., Motomar, Valencia, 240 bls. rags; ———, Capulin, Leith, 114 bls. bagging; ———, Capulin, Dundee, 191 bls. paper stock; Castle & Overton, Inc., Capulin, Dundee, 176 bls. paper stock; E. J. Keller Co. Inc., Capulin, ———, 33 bls. paper stock; E. J. Keller Co. Inc., Exeter, ———, 50 bls. tares; ———, Exeter, Alexandria, 90 bls. rags; Draycott Mills, Inc., Tuscania, Glasgow, 59 bls. rags; T. D. Downing & Co., Tuscania, Glasgow, 81 bls. bagging; ———, Tuscania, Glasgow, 196 bls. paper stock.

GLUE STOCK, ETC.

E. F. Hickey, H. Jaspar, Antwerp, 46 bls. glue stock; ———, Vulcania, Trieste, 130 bags hide glue; ———, A. Ballin, Hamburg, 843 bags bone glue.

OLD ROPE

E. J. Keller Co. Inc., Amer. Merchant, London, 48 coils; W. Steck & Co., Statendam, Rotterdam, 48 coils; Banco Coml Italiane Trust Co., Motomar, Marseilles, 375 coils; ———, Statendam, Rotterdam, 57 coils; ———, Capulin, Leith, 70 coils; Continental Bank Trust Co., Manhattan, Hamburg, 58 coils.

CASEIN

Tupman Thurlow, Co. Inc., Algic B., Ayres, 1667 bags; Chase National Bank, Indep. Hall, St. Nazaire, 528 bags; Casein Manfg. Co., Eastern Prince, B. Ayres, 250 bags; D. C. Andrews & Co., A. Ballin, Hamburg, 70 bags.

WOOD PULP BOARDS

Lagerloef Trading Co., Scanpenn, Kotka, 252 bls.; Heidelbach Ickelheimer & Co., Statendam, Rotterdam, 830 bdls.

WOOD PULP

Castle & Overton, Inc., Statendam, Rotterdam, 252 bls. wood pulp; ———, Vigor, Stugsund, 375 bls. sulphite; Pagel Horton & Co. Inc., Vigor, Munksund, 3000 bls. sulphate, 500 tons; ———, Scanpenn, Helsingfors, 125 bls. sulphate, 25 tons; Castle & Overton, Inc., Scanpenn, Wiborg, 4275 bls. wood pulp, 855 tons; Lagerloef Trading Co., Scanpenn, Kotka, 2725 bls. sulphate, 545 tons; Lagerloef Trading Co., Scanpenn, Kotka, 270 bls. sulphite, 57 tons; Lagerloef Trading Co., Malaren, Rauma, 1404 bls. sulphite; ———, Malaren, Kemi, 4798 bls. sulphite; Castle & Overton, Inc., A. Ballin, Hamburg, 2255 bls. wood pulp, 451 tons.

PULPWOOD

Polarus Shipping Co., Winroth Soldiers, Cove, 1500 cords.

ALBANY IMPORTS

WEEK ENDING SEPTEMBER 9, 1933

Polarus Shipping Co., Kalimba, Archangel, 3243 cords pulpwood; Amtorg Trading Corp., Taransay, Archangel, 3220 cords pulpwood; ———, Vigor, Stugsund, 3375 bls. sulphite, 675 tons; Central Hanover Bank Trust Co., Vigor, Stugsund, 3350 bls. sulphate, 670 tons; Bulkley Dunton & Co., Vigor, ———, 3675 bls. wood pulp; Perkins Goodwin & Co., Vigor, Sundsvall, 5982 bls. sulphate; Johaneson Wales & Sparre, Inc., Vigor, Sundsvall, 1188 bls. sulphite; Johaneson Wales & Sparre, Inc., Vigor, Sundsvall, 250 bls. chemical pulp; Acer & Co., Nordpol, Quatsina, B. C., 4940 bls. pulp, Bulkley Dunton & Co., Jethou, ———, 2500 bls. wood pulp.

PORTLAND IMPORTS

WEEK ENDING SEPTEMBER 9, 1933

Lagerloef Trading Co., Malaren, ———, 1524 bls. ground pulp; Castle & Overton, Inc., Malaren, ———, 1682 bls. wood pulp; ———, Malaren, ———, 700 bls. sulphite; ———, Malaren, ———, 4582 bls. sulphate; Bulkley Dunton & Co., Heddernheim, ———, 125 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING SEPTEMBER 9, 1933

Perkins Goodwin & Co., Vigor, Sundsvall, 3000 bls. sulphate; ———, Tuscania, Glasgow, 82 bls. paper stock.

PHILADELPHIA IMPORTS

WEEK ENDING SEPTEMBER 9, 1933

Bank of N. Y. Trust Co., L. A. Christensen, Barcelona, 100 bls. rags; ———, L. A. Christensen, Barcelona, 351 bls. rags; Keene & Arkus, Indep. Hall, Bordeaux, 636 bls. rags; H. G. Lichtenstein, Indep. Hall, Bordeaux, 334 bls. rags; Keene & Arkus, Indep. Hall, St. Nazaire, 209 bls. rags; E. J. Keller Co. Inc., Indep. Hall, ———, 34 bls. rags; Philadelphia National Bank, Motomar, Genoa, 4 cs., 2 bls. stereotype paper; Keene & Arkus, Motomar, Barcelona, 79 bls. rags; National Vulcanized Fibre Co., Motomar, Barcelona, 607 bls. rags; National Vulcanized Fibre Co., Motomar, Valencia, 84 bls. rags; H. G. Lichtenstein, Motomar, Marseilles, 783 bls. rags; Jay Madden Corp., Scanpenn, Helsingfors, 114 bls. tissue paper; Lagerloef Trading Co., Scanpenn, Wiborg, 1463 bls. sulphite, 292 tons; Castle & Overton, Inc., Scanpenn, Wiborg, 973 bls. wood pulp, 195 tons; Paper Manufacturing Co., Scanpenn, Kotka, 65 rolls news print; J. W. Hampton Jr. & Co., Scanpenn, Kotka, 74 rolls news print; Lagerloef Trading Co., Scanpenn, Kotka, 1149 bls. sulphite; J. Wallworth Sons Inc., Capulin, Dundee, 18 bls. paper stock; Chase National Bank, Capulin, Dundee, 99 bls. paper stock; ———, Capulin, London, 86 bls. rags; Brown Bros. Harriman & Co., Capulin, London, 26 bls. waste paper; A. Brown & Sons, Capulin, London, 32 bls. rags; O. H. Hempstead & Son, Capulin, London, 110 bls. waste paper; F. Webber & Co. Inc., Capulin, London, 3 cs. card board; ———, Capulin, Hamburg, 428 bls. rags; ———, Capulin, Leith, 119 bls. rags; Union Waste Co., Wales Maru,

Kobe, 105 bls. rags; Bulkley Dunton & Co., Graengesburg, ———, 3750 bls. wood pulp.

WEEK ENDING SEPTEMBER 2, 1933

Price & Pierce, Ltd., City of Fairbury, Wallvik, 250 bls. mechanical pulp, 50 tons; ———, City of Fairbury, Hermosand, 150 bls. sulphite, 25 tons; Lagerloef Trading Co., City of Fairbury, Helsingfors, 76 bls. sulphite, 15 tons; J. W. Hampton, Jr. & Co., City of Fairbury, Helsingfors, 63 rolls, news print; Paper Manufacturers Co. Inc., City of Fairbury, Helsingfors, 138 rolls news print; Bulkley Dunton Co., City of Fairbury, ——, 125 bls. wood pulp, 25 tons; Bulkley Dunton & Co., Graengesburg, ——, 3750 bls. wood pulp; Bulkley Dunton & Co., Leuna, ———, 271 bls., wood pulp; Paper House of Pennsylvania, Scanmail, Helsingfors, 56 rolls news print; J. W. Hampton, Jr. & Co., Scanmail, Helsingfors, 82 rolls news print; F. Whitaker, West Arrow, Rotterdam, 37 bls. rags; E. W. Twitchell, Inc., West Arrow, Rotterdam, 99 cs. paper; State Chemical Co., West Arrow, Rotterdam, 700 bg. woodflour; E. Mayer, West Arrow, Rotterdam, 172 bls. rags; ——, Exporter, Barcelona, 133 bls. rags; E. J. Keller Co. Inc., Exporter, ——, 283 bls. rags; ——, Lehigh, Liverpool, 14 bls. rags.

BALTIMORE IMPORTS

WEEK ENDING SEPTEMBER 9, 1933

National City Bank, Indep. Hall, Bordeaux, 922 bls. rags; Congoleum Nairn Co., Indep. Hall, Bordeaux, 1254 bls. rags; Castle & Overton, Inc., Malaren, ———, 1627 bls. wood pulp; Irving Trust Co., Malaren, ———, 330 bls. sulphate; Lagerloef Trading Co., Malaren, ———, 166 bls. pulp boards; Lagerloef Trading Co., Malaren, ———, 2588 bls. ground pulp; Lagerloef Trading Co., Malaren, ———, 1935 bls. sulphite; ———, Malaren, ———, 2387 bls. sulphite; ——, Malaren, ——, 143 rolls news print; National City Bank, Capulin, Leith, 119 bls. bagging; ——, Capulin, Leith, 187 bls. waste paper; W. H. Masson, Capulin, Leith, 164 bls. waste paper; Congoleum Nairn Co., Waukegan, Havre, 76 bls. bagging; Congoleum Nairn Co., Waukegan, Havre, 1158 bls. rags; Congoleum Nairn Co., Waukegan, Dunkirk, 966 bls. rags; Bulkley Dunton & Co., Etna, ———, 2250 bls. wood pulp.

WEEK ENDING SEPTEMBER 2, 1933

Congoleum Nairn Co., West Arrow, Rotterdam, 136 bls rags; Congoleum Nairn Co., Exporter, Marseilles, 646 bls. rags; G. A. Henshaw Son, Lehigh, Liverpool, 98 coils old rope; Brown Bros., Harriman & Co., Lehigh Liverpool, 82 bls. rags; E. Butterworth & Co. Inc., Lehigh, Manchester, 145 bls. bagging; Gottesman & Co., Inc., Etna, Sweden, 150 bls. wood pulp.

CAMDEN IMPORTS

WEEK ENDING SEPTEMBER 2, 1933

Bulkley Dunton & Co., Lulea, ——, 125 bls. wood pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING SEPTEMBER 2, 1933

Bulkley Dunton & Co., Graengesberg, ——, 3200 bls. woodpulp; Bulkley Dunton & Co., Willzipo, ——, 1152 bls. wood pulp.

GALVESTON IMPORTS

WEEK ENDING SEPTEMBER 2, 1933

Parsons & Whittemore, Inc., Nishamia, ——, 300 bls. sulphite pulp.

MOBILE IMPORTS

WEEK ENDING SEPTEMBER 2, 1933

Parsons & Whittemore, Inc., Antinous, ——, 329 bls. sulphite.

GENERAL CODE FOR PAPER AND PULP

(Continued from page 24)

uct of the industry, and for a requirement that no member shall sell any such product below such cost.

(c) For restrictions on the creation of new facilities for the manufacture of any product of the industry or on the acquisition by any member of new equipment for such manufacture, and on the shifting of equipment from the manufacture of one kind or type of such product to another kind or type thereof.

(d) For restrictions on sales to dealers or distributors who refuse to enter into agreements, or who have violated agreements, to abide by resale prices prescribed by sellers who are members of the industry.

(e) For the establishment of plans to bring about a reasonable balance between the production and consumption of the products of the industry.

Such recommendations, when approved by the Administrator, shall have the same force and effect as other provisions of this Code.

7. Any work or process incidental to and carried on by a member at his plant as a part of the manufacture of any product of the industry shall be governed by the provisions of this Code rather than of any other code.

8. Such of the provisions of this Code or of any divisional code as are not required to be included therein by the Act may, with the approval of the President of the United States, be modified or eliminated as changes in circumstances or experience may indicate.

9. This Code shall become effective on the second Monday after the date upon which it shall be approved by the President of the United States.

10. This Code and each divisional code and all the provisions thereof are expressly made subject to the right of the President, in accordance with the provisions of Clause 10 (b) of the Act, from time to time to cancel or modify any order, approval, license, rule or regulation, issued under Title I of said Act, and specifically to the right of the President to cancel or modify his approval of such code or any conditions imposed by him upon his approval thereof.

11. Proposed amendments to this Code or to divisional codes, duly adopted by the organization concerned, may be presented by the Paper Industry Authority to the Administrator and when approved by him, such amendments shall become a part of such code.

More Pulpwood for Albany

ALBANY, N. Y., September 5, 1933—The latest problem confronting court officials here are shipments of pulpwood from Vancouver, B. C., to this city via the Panama Canal for use at paper mills along the Canadian border. The movement is considered unusual as it represents a part of the general import of pulpwood, most of which is coming from Russia. It was pointed out by the local officials that pulpwood shipments are now converging on Albany from two points, each several thousand miles from this harbor.

Receiver for Parker-Young Co.

Karl D. Scates, treasurer and general manager of the Parker-Young Company, whose plants are in Plymouth and Lincoln, N. H., has been appointed receiver to conduct the business of the company. This is a friendly action and current relations will be continued as in the past. The sales office of the company is at 148 State street, Boston, Mass.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, September 13, 1933.

Trading in the local paper market is slightly livelier. Demand for the various standard grades is fairly persistent. Sales forces of the leading paper organizations are optimistic and are looking forward to transacting a good volume of business during the closing months of the year.

The news print paper market is in a sounder position than of late. Advertising volume showed a satisfactory gain during the past month over the corresponding period of 1932. Production is being maintained at a steadier pace. The price situation is practically unchanged.

Operations in the paper board industry are proceeding in sufficient volume to take care of current requirements. Box board continues steady. The fine paper market is displaying strength. Tissues are moving freely. The coarse paper market is fairly active, with prices quite firm.

Mechanical Pulp

Steadiness prevails in the ground wood pulp market. With production in North America and abroad being practically keyed to consumption the statistical position of the industry continues sound. The contract movement is normal for the season. Prices are holding up well and shading is infrequent.

Chemical Pulp

The chemical pulp market continues firm, although demand for the various grades of domestic and imported chemical pulp has fallen off slightly. Imported bleached sulphite is quoted at from $2.70 to $3.00, on dock, Atlantic ports, while Domestic and Canadian bleached sulphite is selling at from $2.50 to $3.75, f.o.b. pulp mill.

Old Rope and Bagging

Conditions in the old rope market are fairly satisfactory. Demand for both domestic and foreign old manila rope is moderately active. Small mixed rope is quiet. The bagging market is dull but steady. Demand for scrap and gunny bagging is light. No radical change in prices.

Rags

The domestic rag market is marking time. New cotton rags are moderately active. No. 1 white shirt cuttings are moving in fair volume. Roofing grades are arousing more interest. The special feature of the imported rag market is the continued firmness of old white linens and new cuttings.

Waste Paper

Board mill demand for the lower grades of waste paper is improving slowly following the holiday lull. Quotations on strictly folded news and No. 1 mixed paper are steadier. Interest in the higher grades of waste paper is well sustained. Hard and soft white shavings are holding up well. Book stock is steadier.

Twine

Most of the business transacted in the local twine market during the past week was along routine lines. Offerings are not excessive, however, and, as demand for the various grades will undoubtedly expand from now until the end of the year, the future outlook for the industry is considered bright.

FRAME NEW GENERAL CODE

(Continued from page 11)

Announcement was made by the Labor Advisory Board of NRA that Major George L. Berry, will be the labor advisor at the paper and pulp hearing. He is president of the International Printing, Pressman and Assistants' Union of North America. The other labor advisor will be Solomon Barkin.

S. L. Willson to Make Opening Statement

Mr. Willson will make the opening statement at the hearing for the Association.

The committees of the Association having charge of the various sections of the code include, Articles one, two and three, D. C. Everest, chairman; with Norman Harrower and D. A. Smith members of the committee; Articles four, five and six, George H. Mead, chairman, and members, A. C. Goodyear, S. B. Copeland, Charles H. Sage, Henry D. Schmidt, and Adam Wilkinson, ex officio; Article seven, A. R. Graustein, chairman and the following members; J. D. Zellerbach, Louis E. Vose, and Eustis Paine; Article eight, Paul S. Fiske, chairman and R. S. Madden and Donald V. Lowe; Article nine, Norman W. Wilson, chairman and H. W. Ellerson and George H. Mead. Details of the hearing will be published next week.

Boston Paper Trade Happenings

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., September 11, 1933—Linton Bros. & Co., of Fitchburg, Mass., of which concern Carter Rice & Co. Corp., is a representative, has inaugurated a campaign consisting of a series of six mailing pieces of various Bristols. In addition to the actual demonstration of the uses of Bristol, a clear explanation of its possibility is given. Carter Rice & Co. is presenting this effective series to its customers.

The first of a series of mailing pieces featuring Strathmore Business Announcements, made by the Strathmore Paper Company, Mittineague, Mass., has been mailed to New England printers who are customers of Carter Rice & Co. It consists of a folder in which are several actual printed suggestions for fall advertising.

Theodore Pell, formerly of Allman & Christiansen Paper Company, Milwaukee, Wis., has become a member of the sales staff of the Brown Company, covering the New England States with the entire line of Nibroc papers, including the improved printing papers of Solka content. The Old Colony Envelope Company is making envelopes of Solka paper.

The first regular meeting of the season of the New England Paper Merchants Association is to be held at the Hotel Touraine Thursday evening, September 14.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, September 13, 1933.

BLANC FIXE.—Producers of blanc fixe are quoting higher prices. The contract movement is fairly heavy. The powder is now quoted at from 3½ to 3¾ cents per pound, in barrels, at works; while the pulp is still quoted at from $42.50 to $45 per ton, in bulk.

BLEACHING POWDER.—The bleaching powder market is moderately active. Shipments against contract are moving with regularity. Prices are holding to previously quoted levels. Bleaching powder is quoted at from $1.75 to $2.00 per 100 pounds, in drums, at works.

CASEIN.—The casein market is softer. Domestic standard ground is quoted at 14 cents and finely ground at 15 cents per pound. Argentine standard ground is selling at 13¾ cents and finely ground at 14½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Demand for caustic soda is persistent. Prices are holding to schedule. Solid caustic soda is quoted at from $2.55 to $3.00; while the flake and the ground are selling at from $2.95 to $3.00 per 100 pounds, in large drums, at works.

CHINA CLAY.—The china clay market is practically unchanged. The contract movement is normal. Imported china clay is still quoted at from $12 to $17 per ton, ship side; while domestic paper making clay is selling at from $4.50 to $12 per ton, at mine.

CHLORINE.—Conditions in the chlorine market are satisfactory. Demand from the paper mills is excellent. The contract movement is normal for the season. Chlorine is quoted at $1.75 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is marking time. Grades of gum rosin used in the paper mills are quoted at around $4.95 per 280 pounds, in barrels, at works; while wood rosin is selling at $3.90 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Sentiment in the salt cake market is optimistic. Prices are firm. Salt cake is quoted at from $14 to $14.50; chrome salt cake at from $13.50 to $14 per ton, at works; while imported salt cake is selling at from $14 to $14.50 per ton, on dock.

SODA ASH.—The soda ash market is exhibiting a strong undertone. Contract shipments are moving in good volume. Prices continue steady. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.30; and in barrels, $1.43.

STARCH.—Due to the firmness of the basic grain market, the starch market is in a stronger position. The contract movement is seasonal. Special paper making starch is quoted at $2.84 per 100 pounds, in bags; and at $3.11 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Paper mill demand for sulphate of alumina is seasonal. Prices are holding to schedule, without difficulty. Commercial grades are quoted at from $1.25 to $1.46; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market is firm. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Trading in the talc market is fairly active. The contract movement is about normal for the time of year. Domestic talc is quoted at from $16 to $18 per ton, in bulk, at eastern mines; while imported talc is selling at from $20 to $50 per ton, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	—
Bonds	6.00	@	—
Index	6.00	@	—
Writings—			
Extra Superfine	6.50	@	—
Superfine	6.25	@	—
Tub sized	5.75	@	—
Engine sized	5.50	@	—
Book, Cased—			
S. & S. C.	5.50	@	—
S. & S. C. Litho.	5.75	@	—
M. F.	5.25	@	—
Coated and Enamel	6.15	@	9.30
Coated Litho	6.90	@	—
Tissues—Per Ream—			
White No. 1	.60	@	.80
White No. 2	.55	@	.70
Anti-Tarnish M. G. only	.75	@	.80
Colored	.80	@	1.00
Kraft	.75	@	.80
Manila	.65	@	.70
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.11	@	—
No. 2	.10	@	—
Bleached, basis 20 lbs.	.13	@	—

(Delivered New York)

News, per ton—			
Roll, contract	40.00	@	—
Rolls, spot	40.00	@	—
Sheets	45.00	@	—
Side Runs	25.00	@	—
Kraft—			
No. 1 Domestic	4.75	@	5.00
No. 2 Domestic	3.62½	@	4.00
Southern	3.62½	@	4.00
Imported	Nominal		
Boards—per ton—			
News	45.00	@	50.00
Chip	42.50	@	47.50
Binders Boards	68.00	@	72.00
Kraft Liner	75.00	@	85.00
Standard 85 Test Jute Liner	50.00	@	55.00
Sg'. Mla. Ll. Chip	52.50	@	55.00

(F. o. b. Mill)

Wood Pulp Board	70.00	@	80.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	24.00	@	28.00
Dry	26.00	@	28.00

(F.o.b. Mill)

No. 1 Domestic and Canadian	24.00	@	28.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	2.70	@	3.00
Easy Bleaching	1.95	@	2.10
No. 1 strong unbleached	1.90	@	2.00
Mitscherlich Unbleached	1.95	@	2.00
No. 2 Strong unbleached	1.75	@	1.85
No. 1 Kraft	1.75	@	1.85
No. 2 Kraft	1.60	@	1.70
Sulphate—			
Bleached	2.75	@	3.25

(F. o. b. Pulp Mill)

Sulphite (Domestic and Canadian)—			
Bleached	2.50	@	3.75
Easy Bleaching	1.80	@	1.90
News	1.70	@	1.80
Mitscherlich unbleached	2.25	@	2.50
Kraft (Domestic)	1.60	@	2.75
Soda Bleached	2.50	@	—

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	5.75	@	6.25
Silesias No. 1	4.00	@	4.50
New Unbleached	6.75	@	7.25
New Soft Blacks	3.00	@	3.25
Blue Overall	4.25	@	4.50
Fancy	2.00	@	2.25
Washables	1.75	@	2.00
Mixed Khaki Cuttings	2.50	@	2.75
O. D. Khaki Cuttings	3.13	@	3.38
Men's Corduroy	1.50	@	1.75
New Mixed Blacks	2.50	@	2.75

Old Rags

White, No. 1—			
Repacked	3.75	@	4.00
Miscellaneous	3.00	@	3.50
White, No. 2—			
Repacked	2.00	@	2.50
Miscellaneous	1.75	@	2.00
Thirds and Blues—			
Repacked	1.75	@	2.00
Miscellaneous	1.50	@	1.75
Black Stockings	2.50	@	3.00
Roofing Rags—			
No. 1	.90	@	.95
No. 2	.80	@	.85
No. 3	.75	@	.80
No. 4	.70	@	.75
No. 5A	.65	@	.70

Foreign Rags

New Rags

New Dark Cuttings	1.50	@	1.60
New Mixed Cuttings	1.60	@	1.70
New Light Silesias	3.50	@	3.75
Light Flannelettes	3.25	@	3.50
Unbleached Cuttings	5.75	@	6.00
New White Cuttings	5.50	@	6.00
New Light Oxfords	3.25	@	3.50
New Light Prints	2.75	@	3.00

Old Rags

No. 1 White Linens	7.00	@	7.50
No. 2 White Linens	6.00	@	6.50
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	3.75	@	4.00
No. 2 White Cotton	3.00	@	3.25
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.50	@	1.60
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	1.65	@	1.80
French Blue Linens	2.10	@	2.25
German Blue Linens	1.85	@	2.00
German Blue Cottons	1.35	@	1.50
Checks and Blues	1.30	@	1.40
Lindsay Garments	1.10	@	1.15
Dark Cottons	.95	@	1.00
Old Shopperies	.85	@	.90
New Shopperies	.80	@	.85
French Blues	1.50	@	1.65

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.30	@	1.40
Domestic	1.25	@	1.35
Wool Tares, light	1.05	@	1.15
Wool Tares, heavy	1.05	@	1.15
Bright Bagging	1.00	@	1.10
Manila Rope—			
Foreign	2.50	@	2.75
Domestic	2.50	@	2.75
Small Mixed Rope	1.00	@	1.25
New Burlap Cut	1.50	@	1.75
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.65	@	2.85
Ordinary Hard White No. 1	2.40	@	2.50
Hard White No. 2	2.30	@	2.40
Soft White No. 1	2.30	@	2.40
Flat Stock—			
Stitchless	1.05	@	1.15
Overissue Mag.	1.05	@	1.15
Solid Flat Book	.95	@	1.05
Crumpled No. 1	.85	@	.90
Solid Book Ledger	1.50	@	1.75
Ledger Stock	1.05	@	1.15
New B. B. Chips	.65	@	.70
Manilas—			
New Env. Cut	1.65	@	1.75
New Cuttings	1.20	@	1.25
Extra No. 1 old Print	.90	@	1.00
Bogus Wrapper	Nominal		
Container	.70	@	.80
Old Kraft Machine—	Nominal		
Compressed bales	1.20	@	1.30
News—			
No. 1 White News	1.20	@	1.30
Strictly Overissue	.75	@	.85
Strictly Folded	.80	@	.85
No. 1 Mixed Paper	.60	@	.65

FARREL-BIRMINGHAM COMPANY, INC.

50 STATE ST., ANSONIA, CONN.

PAPER MACHINERY

CALENDERS: Board
CALENDERS: Paper
CALIPERS: Roll
GRINDING MACHINES: Roll
PRESSES: Hydraulic
Calender Roll Recovering
Pulp Dehydrating
ROLLS: Chilled Iron, Dry Sand, Gray Iron, Alloy Iron, Steel, Chromium Plated.
For: Calender Stacks
Board Calenders
Super-Calenders
Glassine Calenders
Friction Rolls
Breaker Rolls
Smoothing Rolls
Coating Rolls
Creping Rolls
Plater Rolls
Cutting Machines
Paraffining and Waxing Machines
Saturating Machines
Silicating Machines
Miscellaneous Special Purposes
TRANSMISSION MACHINERY
Gears, Cut: Spur, Single and Double Helical (Farrel-Sykes Continuous Tooth Type)
Speed Reducing and Increasing Units
Flexible Couplings

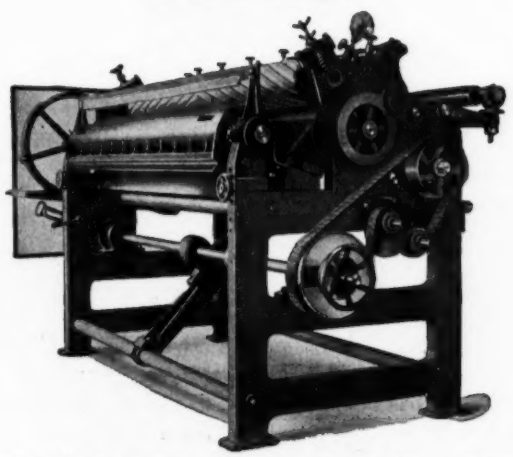
FARREL
Indicating Calipers
pay for themselves

Absolutely accurate.
Simple, light weight, easy to handle, moves freely on rollers.
Shows slightest variation in diameter and measures exact amount of crown.
Gives accurate knowledge of roll condition.
Made in five sizes to measure rolls from 4" to 50" diameter.
Complete details in Bulletin No. 106, copy free on request.

NEW RECORDS FOR PRODUCTION AND PRECISION ARE MADE ON FARREL-BIRMINGHAM MACHINES.

MODEL 28

ROLLER BEARING CUTTER

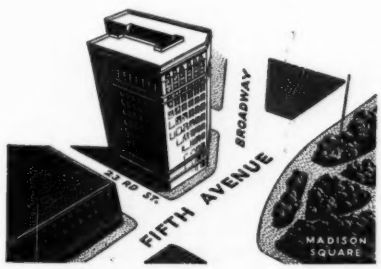


HAMBLET MACHINE CO.

LAWRENCE, MASS.

MAKERS OF
SINGLE, DUPLEX AND DIAGONAL PAPER CUTTERS, CUTTER KNIVES, PATENT TOP SLITTERS.

Paper buyers the country over must come to THE FIFTH AVENUE BUILDING —the "Paper Center"



ATTRACTED by the strategic location of The Fifth Avenue Building—at the crossing of Fifth Avenue and Broadway at Madison Square—leaders in the Paper Industry have established their New York showrooms and offices in this famous building. Here are concerns whose names are known the world over as makers of quality paper. To them come buyers, not only from all America, but from all the world—to see and buy.

Not only is The Fifth Avenue Building recognized as the "Paper Center of America" but under its one roof may be found leaders in many and varied lines—stationery, toys, novelties, house-furnishings, electrical appliances, pottery, glass, china and others. Buyers flock here at all seasons of the year to inspect and place orders from exhibits representing the very latest offerings in their lines.

Those seeking a New York address of permanency and prestige—one that commands respect—should investigate the advantages of having Fifth Avenue Building Space. It is but ten minutes from the Pennsylvania Station and only thirteen from Grand Central. Buses and surface cars pass the doors. Convenient to hotels. Subway entrance in the building. Smart new restaurant on the ground floor. Efficient elevator service. Information booth in the lobby. Why not let us show you through the building?

THE FIFTH AVENUE BUILDING

Broadway and Fifth Avenue at Madison Square, New York

"More than an office building"

Twines
(F. o. b. Mill)

Cotton—			
B. C. 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.15½	@	.16½
No. 2	.15	@	.16
Tube Rope—			
4-ply and larger	.09¾	@	.11¾
Fine Tube Rope—			
4-ply	.13¾	@	.14¾
3-ply	.14¼	@	.14¾
2-ply	.15¼	@	.15¾
Paper Makers Twine	.08¾	@	.10¾
Box Twine, 2-3 ply	.12¼	@	.13½
White Hemp	.12¾	@	.15¾
Java Sisal—			
No. 1 Basis	.11½	@	—
No. 2 Basis	.10½	@	—
New Zealand Sisal	.11½	@	—
Sisal Lath Yarn—			
No. 1	.13½	@	.15½
No. 2	.11½	@	.13½
Manila Twine	.24½	@	.29½

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¾
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.04	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.07	@	.18
No. 1 M. F. Book	.06½	@	.07¾
No. 2 M. F. Book	.05¾	@	.06¾
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¾
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	3.50	@	4.50
Southern Kraft	2.62½	@	—
No. 2 Kraft	2.62½	@	—
Wood Tag Boards	.04¼	@	.06¾
Sulphite Screenings	.03	@	.03¾
Manila Tissue	.07	@	.07¾
White Tissue	.07¼	@	.07½

(Delivered Central Territory)

News, per ton—			
Rolls, contract	45.00	@	—
Sheets	50.00	@	—
Boards, per ton—			
Plain Chip	37.50	@	—
Solid News	43.50	@	—
Manila Lined Chip	47.50	@	—
Patent coated	55.00	@	—
Container Lined—			
85 Test	60.00	@	65.00
100 Test	60.00	@	70.00

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	1.70	@	1.80
No. 1 Hard White	1.40	@	1.50
No. 1 Soft White	1.20	@	1.30
Ledger & Writings	.80	@	.90
Solid Books	.80	@	.90
Blanks	1.00	@	1.05
Krafts	.90	@	1.00
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	1.00	@	1.05
Print Manila	.60	@	.65
Overissue News	.60	@	.70
Old Newspapers—			
No. 1	.55	@	.65
Mixed Papers—			
No. 1	.50	@	.55
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.04	@	.48
Ledgers	.06	@	.40
Writings—			
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Fine No. 3	.05½	@	.18
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.06	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.06	@	.10
Manila Sul., No. 1	.03	@	.06
Manila No. 2	.03	@	.05
No. 1 Kraft	.05¼	@	.06½
No. 2 Kraft	.03¾	@	.05
Southern Kraft	2.75	@	4.00
Common Bogus	.03	@	.04½

(Delivered Philadelphia)

News Print Rolls	46.00	@	55.00
Straw Board	40.00	@	45.00
News Board	37.00	@	45.00
Chip Board	40.00	@	45.00
Wood Pulp Board	70.00	@	85.00
Mill Board—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1 50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25
Khaki Cuttings—			
No. 1 O.D.	.03	@	.04
No. 2 Mixed	.03	@	.04
Corduroy	.02	@	.03
New Canvas	.03½	@	.04½
New Black Mixed	.02½	@	.03½

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.03½	@	.04
New White, No. 2	.02½	@	.04
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01½	@	.02
Blue Overall	.03½	@	.04
Cottons—According to grades—			
Washable, No. 2	.02½	@	.03
New Blue	.01½	@	.03
Fancy	.01½	@	.03
New Black Soft	.02	@	.04
New Light Seconds	.01½	@	.02
New Dark Seconds	1.50	@	1.75

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.50
Miscellaneous	1.75	@	2.25
M. G.	3.00	@	3.75
Thirds and Blues—			
Miscellaneous	1.00	@	1.50
Repacked	1.50	@	2.00
Black Stockings (Export)	2.00	@	3.50
Roofing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.85

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	1.75
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.30	@	2.40
No. 2 Hard White	2.10	@	2.15
No. 1 Soft White	2.00	@	2.10
No. 2 Soft White	1.15	@	1.25
No. 1 Mixed	.95	@	1.00
No. 2 Mixed	.75	@	.80
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.20	@	1.25
No. 1 Books, heavy	1.20	@	1.25
No. 2 Books, light	.90	@	1.00
No. 1 New Manila	1.65	@	1.75
No. 1 Old Manila	.95	@	1.00
Print Manila	.90	@	.95
Container Manila	.85	@	.90
Old Kraft	1.20	@	1.25
Common Paper	.60	@	.70
No. 1 Mixed Paper	.75	@	.80
Straw Board Chip	.70	@	.75
Binders Board Chip	.70	@	.75
Corrugated Board	.90	@	.95
Overissue News	.70	@	.80
Old Newspaper	.70	@	.80

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.05½	@	.11
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04½	@	—
No. 2 Kraft	.03½	@	—

(F. o. b. Boston)

Southern Kraft	.03½	@	—

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¼

(Delivered New England points)

News Print, rolls	44.50	@	—
Straw Board, rolls.009	—	@	35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	45.00	@	50.00
Chip Board	42.50	@	47.00
Chip Board (Creasing)	45.00	@	—
Single Manila Lined Chip	52.50	@	62.50
Single White, Patent Coated News Board—			
Bender	62.50	@	72.50
Wood Pulp Board	70.00	@	75.00
Binder Boards	62.00	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Soft White	1.90	@	2.00
No. 1 Old Manila	.50	@	.60
No. 1 Mixed	.90	@	1.00
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.40	@	1.50
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	1.00	@	1.10
No. 1 Books, heavy	1.10	@	1.20
No. 1 Books, light	.80	@	1.00
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.25	@	1.30
No. 1 Old Manila	1.00	@	1.10
White Blank News	1.20	@	1.30
No. 1 Kraft	1.25	@	1.30
Manila	.90	@	1.05
No. 1 Mixed Papers	.60	@	.65
Print Manila	.87½	@	.92½
Overissue News	.80	@	.90
Old Newspapers	.70	@	.70½
Box Board Chips	.55	@	.65
Corrugated Boxes	—	@	.77½
Screening wrappers	.75	@	.85

Bagging
(F. o. b. Boston)

Manila Rope—			
Foreign	—	@	2.35
Domestic	2.50	@	—
Transmission Rope	1.50	@	—
Mixed Strings	.85	@	—
Jute Rope	1.00	@	1.15
Jute Carpet Threads	.65	@	.70
Gunny No. 1—			
Foreign	1.25	@	1.30
Domestic	1.20	@	1.25
Bleachery Burlap	3.00	@	3.25
Scrap Burlap	1.00	@	1.10
No. 1 Scrap Burlap	1.20	@	1.25
Scrap Sisal	1.10	@	1.15
Scrap Sisal for shredding	1.15	@	1.30
Wool Tares, heavy	1.10	@	1.25
New Burlap Cutting	.95	@	1.00
Australian Wool Pouches	2.50	@	—
Heavy Baling Bagging	1.50	@	1.75
Paper Mill Bagging	.85	@	.95
Bagging No. 2	.50	@	.60
No. 1 Burlap	1.75	@	2.25

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.02	@	.02¼
New White No. 1	.05½	@	.06
New White No. 2	.04½	@	.05
Silesias No. 1	.04	@	—
New Black Silesias	.02½	@	.03
New Unbleached	.06	@	—
Fancy	—	@	.02¼
Washable	.02¼	@	—
Cottons—According to grades—			
Blue Overalls	—	@	.03¼
New Black, soft	.04	@	.04½
Khaki Cuttings	.03	@	.03½
O. D. Khaki	.03	@	.03½
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	.05	@	.05½

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.00	@	—
White No. 2—			
Repacked	.01½	@	.01¾
Miscellaneous	.01½	@	.01¾
Twos and Blues	1.25	@	1.50
Thirds and Blues			
Repacked	1.10	@	1.25
Miscellaneous	.85	@	.90
Black Stockings	2.25	@	2.50
Roofing Stock—			
No. 1	.70	@	.75
No. 2	.55	@	.65
No. 3	.35	@	.45

Foreign Rags
(F. o. b. Boston)

Dark Cottons	.75	@	.85
New White Shirt Cuttings	5.50	@	6.50
Dutch Blues	2.00	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.25	@	1.55
Old Linsey Garments	1.05	@	1.25

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.09¾	@	—
No. 2 Sulphite	.08	@	—
No. 1 Colored	.10¼	@	—
No. 2 Colored	.08½	@	.10¼
Ledgers (sulphite)			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.20	@	—
No. 3 M. F. (Carloads)	5.70	@	—
No. 4 M. F. (carloads)	4.75	@	—
No. 1 S. C. (carloads)	6.65	@	—
No. 3 S. C. (carloads)	6.20	@	—
No. 4 S. C. (carloads)	5.20	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.25	@	—
White Wrap	2.00	@	—
"B" Manila	4.75	@	—
No. 1 Manila	5.25	@	—
Fiber	5.25	@	—
Kraft, M. F.	5.75	@	—
Kraft No. 2	5.25	@	—

(F.O.B. Cars Toronto)

News, per ton—			
Rolls (contract)	45.50	@	—
Sheets	50.50	@	—

Pulp
(F. o. b. Mill)

Ground Wood	18.00	@	20.00
Sulphite easy bleaching	40.00	@	—
Sulphite, news grade	38.00	@	—
Sulphite, bleached	50.00	@	55.00
Sulphate	50.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.10
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.50
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.50
Printed Manilas	.55	@	.80
Kraft	1.25	@	1.50
News and Scrap—			
Strictly Overissue	1.00	@	—
Strictly Folded	.85	@	—
No. 1 Mixed Paper	.70	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.05¼	@	.05½
Fancy Shirt Cuttings	.02¼	@	.02½